BELL OPERATING COMPANIES

Service Descriptions

ONA Services User Guide

July 31, 1998

ONA Services

Names, Descriptions, Cross References

FOREWORD

Attached is the Services Descriptions section of the ONA Services User Guide, an update of information that was previously issued on January 31, 1998.

The Services Descriptions section of the ONA Services User Guide represents an agreement on the part of the BOCs for uniform names and technical descriptions of the Basic Serving Arrangements (BSAs), Basic Service Elements (BSEs) and Complementary Network Services (CNSs) that relate to the ESP requests included in BOC ONA Special Report Number 1, Issue 2 (October 1987). That Special Report is a compilation of the 118 requests received by all the BOCs during the input process for ESP requests prior to filing of the 2/1/88 ONA Plans. Some items, marked with an asterisk (*) in their titles, have been deleted after the last issue of the report based on the availability of updated information indicating that they cannot be offered. For each service listed, a table is provided that gives an indication of which BOCs plan to offer the service, the individual BOC's product name, and whether the BOC classifies the service as a BSA, BSE or CNS.

The BSAs, which respond to the 118 ESP requests for ONA services, are listed in the following four categories of Basic Serving Arrangements:

- Circuit Switched Serving Arrangements

    A circuit switched basic serving arrangement (BSA) provides an enhanced service provider (ESP) with a connection to the circuit switched network.

- Packet Switched Serving Arrangements

    A packet switched BSA provides an ESP with a connection to the packet switched network.

- Dedicated Serving Arrangements

    A dedicated BSA provides an ESP with a dedicated point-to-point connection through the network.

- Dedicated Network Access Link Serving Arrangements

    A dedicated network access link (DNAL) BSA provides a dedicated data channel between the ESP's termination and a designated central office which contains the specific features required by the ESP. The DNAL is used to transmit control information from the ESP to the network or to deliver information from the network to the ESP.

Following the BSAs are the BSEs and CNSs, which are listed in alphabetical order in the above four BSA categories. These BSEs and CNSs respond to the 118 ESP requests for ONA services that were made to all BOCs. A description of each BSE or CNS is provided, which includes a brief technical description and a table listing the product name for each company that offers the service.

Appendix 1 contains a set of descriptions of ONA services that are offered by one or more BOC in response to requests received independent of the 118 ESP requests received by all BOCs. Included is a technical description and a table with the product name for each company that offers the service.

Appendix 2 contains a list of BOC contacts.

Appendix 3 contains the BSA Matrix, a report that shows the relationship between the BSAs and the BSEs included in the ONA Services User Guide. Included is a table showing the generic name for each BSA, and the specific name used by each company offering the BSA. Also included is a set of tables, one for each BSA, listing which BSEs are associated with the BSA for each company. These matrices only include generic BSAs and BSEs, and do not include the CNSs or any region specific services.

This report does not supersede any information provided in the BOC ONA plans and amendments. All capabilities described are not available in all switching or transmission systems. Generic descriptions of BSAs do not imply that applicable generic functions and capabilities are available or compatible with all types of BSAs. In addition, generic descriptions are intended for informational purposes and their existence does not imply that specific products and/or services are necessarily tariffed and/or available in any or all state/ federal jurisdictions within a particular company's service area. The BSAs, BSEs and CNSs identified in this report cannot be ordered until appropriate tariffs are effective. Some ONA services may not be tariffed in all areas. The reader should refer to the individual BOC ONA plans and amendments or the BOC contacts listed in Appendix 2 to this report for information on BOC availability and deployment plans for the technical capabilities described in this report.

References to switching system generics that have not yet been released by the vendors are based on our current information about which features are planned for inclusion in those generic releases. If the vendors change the availability of any features for future generic releases that are referenced in this document, the availability of some services may be affected.

Technical references that are publicly available are listed for each service, where available. Ordering information for each of the technical references may be found in the *Bellcore Digest of Technical Information* (including ordering information for reference documents published by individual regional companies). To order, call 1-800-521-2673 toll free from anywhere in the USA; call (732) 699-5800 for foreign calls; fax (732) 336-2559.

Recently, various BOCs have completed, or are in the process of completing, corporate mergers. For this document, the old company names will continue to be used (for example, Bell Atlantic and NYNEX are listed separately; Southwestern Bell and Pacific Bell are listed separately).

Questions on this report should be directed to the BOC contacts listed in Appendix 2 to this report.

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BSA Descriptions

BSAs have been arranged into four categories:

1. Circuit Switched

2. Packet Switched

3. Dedicated

4. Dedicated Network Access Link

Each category may have several types. Following are descriptions of the BSA categories and the associated BSA types.

1. Category 1 - Circuit Switched BSA

A circuit switched basic serving arrangement (BSA) provides an enhanced service provider (ESP) with a connection to the circuit switched network. This BSA is capable of supporting analog signals of approximately 300 to 3000 Hz or a circuit switched digital interface with a call type of digital encoded voice, 3.1 kHz or 7 kHz audio, 56 kbps or 64 kbps data transmission. This BSA may also transmit voice grade analog data. The transmission interface may be 2-wire or 4-wire, or derived from a variety of multiplexing alternatives (for example, Digital Signal (DS) level 0 from DS level 1, or DS1 from DS3).

This BSA may support one-way or two-way directionality. Calls are set up and taken down on a call by call basis. The transport/usage element could be intra-office or inter-office.

Route diversity may be available with this serving arrangement.

1.1 Category 1, Type A - Circuit Switched Line BSA (1039)

Service Description

A circuit switched line BSA provides an ESP with a line side connection to the circuit switched network.

This line side connection could include alternative types of network connection, address and supervisory in-band or out-of-band signaling. Examples of network connections are standard telephone line or a line side type connection (e.g., PBX service). This BSA may support one-way or two-way directionality on a 2-wire or 4-wire transmission interface.

Calls are set up and taken down on a call by call basis. The calling scope may include, for example, an entire Local Access and Transport Area (LATA), a market area or be limited to all or part of a metropolitan area. Directory numbers are assigned from the North American Numbering Plan without any special routing or other use of the number.

Generic Name of BSA	Regional Company BSA Name
Category 1, Type A - Circuit Switched Line BSA*	AM - Circuit Switched Line
	BA - Business Individual Line
	BA - Line Side BSA
	BS - Voice Grade - Line - Circuit Switched
	NX - Circuit Switched - Line
	PB - Access Line Arrangement
	SWB - Circuit Switched - Line Side Basic Serving Arrangement (BSA-A)
	USW - Voice Grade - Line - Circuit Switched

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* Based on the Federal Communications Commission (FCC) CC Docket 89-79 Order dated July 11, 1991, there will be a new line side BSA on FCC approval of tariffs submitted November 1, 1991.

Voice Grade – Line – Circuit Switched — BSA
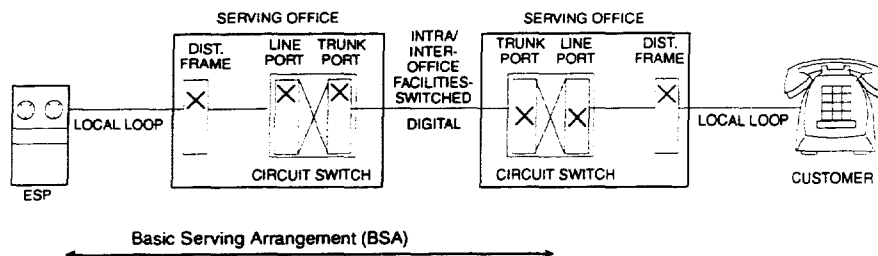
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: Service Code Denial and Uniform Call Distribution.

Signaling

Signaling arrangements extend line circuit or signaling circuit alerting information on metallic or fiber facilities from one customer premises location to another customer premises location. The signaling arrangement can be terminated on trunk-like or line side interfaces of the LEC switch. Examples of address signaling on an analog interface are dial pulse or dual tone multifrequency (DTMF) with supervisory signaling of loop start or ground start. A digital interface will offer address and supervisory signaling via an out-of-band standardized protocol.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-334-CORE, Switched Access Service: Transmission Parameter Limits and Interface Combinations, Issue 1, June 1994 (replaces TR-NWT-000334, Issue 3)

- U S WEST's document 77316 Pacific Northwest Bell's Addendum to Voice Grade Switched Access Service TR-NPL-000334, April 1986.

1.2 Category 1, Type B - Circuit Switched Trunk BSA (1040)

Service Description

A circuit switched trunk BSA provides an enhanced service provider (ESP) with a trunk side connection to the circuit switched network.

Various types of network connections, address signaling and supervisory signaling are available. An example of network connections to the serving office may be direct trunk or a tandem connection. Calls are set up and taken down on a call-by-call basis. Different access arrangements, based on the North American Numbering Plan, are available from the Local Exchange Carriers (LEC). This BSA may support one-way or two-way directionality.

Generic Name of BSA	Regional Company BSA Name
Category 1, Type B - Circuit Switched Trunk BSA	AM - Circuit Switched Trunk
	BA - Trunkside BSA - 950 Option
	BA - Trunkside BSA - 10XXX Option
	BS - Circuit Switched Trunk - Voice Grade
	NX - Circuit Switched Trunk
	PB - Access Trunk Arrangement (950)
	PB - Access Trunk Arrangement (10XXX)
	SWB - Circuit Switched - Trunk Side Alternative B Basic Serving Arrangement (BSA-B)
	SWB - Circuit Switched - Trunk Side Alternative D Basic Serving Arrangement (BSA-D)
	USW - Voice Grade - Trunk - Circuit Switched

Voice Grade – Trunk – Circuit Switched — BSA
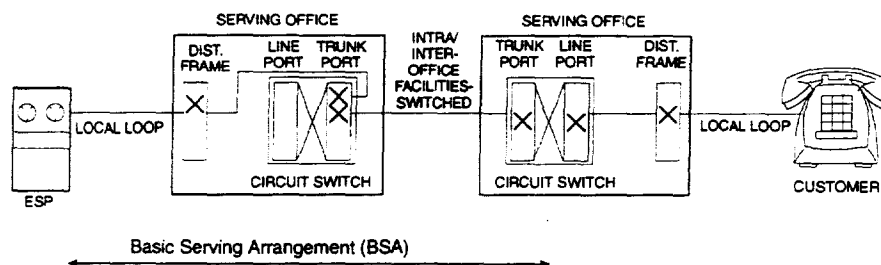
Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the LECs. Refer to the individual LEC tariff reference diskette for the reference information where LEC

defined alternatives may be found. Examples of potential alternatives may be: Service Class Routing, Dial Pulse Address Signaling, and Cut Through.

Signaling

Signaling arrangements extend trunk circuit or signaling circuit alerting information on metallic or fiber facilities from one customer premises location to another customer premises location. These signals are the means by which the end user initiates a request for service, holds a connection or releases a connection. The signaling arrangements can be terminated on line-like or trunk side interfaces of the LEC switch. Examples of point-of-termination supervisory signaling arrangements that may be ordered are Multi-Frequency (in-band), Signaling System 7 (SS7) (out of band), reverse battery and E&M.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-334-CORE, Switched Access Service: Transmission Parameter Limits and Interface Combinations, Issue 1, June 1994 (replaces TR-NWT-000334, Issue 3)

- TR-TSY-000698 Feature Group B FSD 20-24-0300, Issue 1, June 1989, Rev. 1, July 1990

- LSSGR FR-64 (formerly FR-NWT-000064), FSD 20-24-0000, IC/INC Interconnection, Issue 1, March 1991, Module TR-TSY-000690

- TR-NPL-000258 Compatibility Information for Feature Group D Switched Access Service, Issue 1, October 1985.

- SR-NPL-001321 Connection Setup Time for Feature Group D and Termination Feature Group B, Special Report, Issue 1, February 1989.

- Ameritech reference: AM TR-TMO-000094 Switched Access Service Feature Group D, August 1992. (Written as a companion document to TR-NWT-000334, Switched Access Service: Transmission Parameter Limits and Interface Combinations.)

References for SS7

- GR-905 Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and ISDN User Part (ISDNUP), Issue 2, Rev01 - December 1997 (replaces TR-TSV-000905)

- TR-NWT-000394 Switching System Generic Requirements for Interexchange Carrier Interconnection Using the Integrated Services Digital Network User Part (ISDNUP) (A module of LSSGR FR-64), Issue 2, December 1997

References for Signaling Arrangements

- TA-NPL-000912 Compatibility Information for Telephone Exchange Service, Issue 1, February 1989.
- SR-2275 Bellcore Notes on the Networks, Issue 3, December 1997 (replaces SR-TSV-02275, Issue 2)

2. Category 2 - Packet Switched Basic Serving Arrangement

A packet switched BSA provides an ESP with a connection to the packet switched network via virtual and permanent virtual circuit connections. This BSA is capable of supporting analog or digital signals of various transmission rates. The transmission interface may be 2-wire or 4-wire, or derived from a variety of multiplexing alternatives (for example, Digital Signal (DS) level 0 from DS level 1, or DS1 from DS3).

2.1 Category 2, Type A - X.25 Packet Switched BSA (1001)

Service Description

The Type A Packet Switched BSA provides an ESP with X.25 or X.31 access to the BOC packet switching network via virtual and permanent virtual circuit connections. This interface conforms to Recommendations X.25 and X.31 of the International Telecommunication Union-Telecommunication Standardization Sector (ITU-TS) (formerly the International Telegraph and Telephone Consultative Committee [CCITT]).

X.25 includes physical, link and packet level procedures. At the physical level, data signaling rates of 1.2, 2.4, 4.8, 9.6 and 56 kbps are supported. The link level protocol supported at the interface is Link Access Protocol Balanced (LAPB). The main functions of the link level protocol are to ensure that the packets cross the Data Terminal Equipment/Data Communications Equipment (DTE/DCE) interface essentially error free and reach their destination in a correctly transmitted sequence. The network level access protocol provides the procedures required to set up, maintain and clear virtual calls. X.31 defines the recommended procedures for using Q.931 protocol to establish digital customer premises equipment (CPE) calls to a packet network in accordance with defined bearer services.

Generic Name of BSA	Regional Company BSA Name
Category 2, Type A - X.25 Packet Switched BSA	AM - Packet Switched Network Service (X.25)
	BA - Public Data Network: X.25
	BS - PulseLink® Packet Switching - X.25
	NX - INFOPATH® Packet Switching Service
	PB - Public Packet Switching (X.25)
	SWB - Packet Switched - MicroLink II^{SM} (X.25 Version)
	USW - Packet Switching (X.25)

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Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: Logical Channel, Flow Control Parameters, and Multiple Network Addresses.

Signaling

Signaling arrangements extend alerting information on metallic or fiber facilities from one customer premises location to another customer premises location. Dial (circuit-switched) access provides low- to moderate-throughput Public Packet Switched Network (PPSN) access through the voice telephone network. With dial-in access, a customer terminal and modem are attached to the Public Switched Telephone Network (PSTN) loop. The customer dials a North American Numbering Plan (NANP) address and the PSTN routes the call to a PPSN dial-up port. The PPSN answers the call with a modem supporting one of several modem protocols.

With dial-out access, a call is routed to a PPSN interface supporting dial-out service. At this interface, the access concentrator obtains the NANP address and uses the ITU-TS (formerly CCITT) V.25 calling procedures to instruct the PPSN modem to establish a physical connection with the customer via the PSTN.

Dedicated (nonswitched) access provides the customer with continuously available interfaces to the PPSN.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-301 Public Packet Switched Network Generic Requirements (PPSNGR) (replaces TR-TSY-301, Issue 2), Issue 2, December 1997

- TR-NPL-000011 Asynchronous Terminal and Host Interface Reference, Issue 1, March 1985

- Ameritech TR-NPL-000001 Public Packet Services Technical Interface Specifications, Issue 2, September 1988

- Ameritech TR-NPL-000002 Technical Interface Specifications for X.25 Service, Issue 2, May 1988

- Ameritech TR-NPL-000003 Technical Interface Specifications for Asynchronous Service, Issue 2, May 1988

- Ameritech TR-NPL-000007 Digital Service Interface Specifications, Type 1, Issue B, December 1988

- Bell Atlantic TR 72211 Interface Specification For The Bell Atlantic Public Data Network, Issue C, December 1991

- BellSouth TR-73513 PulseLink® X.25 Interface Specification, Issue A, June 1987

- BellSouth TR-73516 PulseLink® Physical Interface Specification, Issue C, September 1991

- NYNEX NTR-74250 INFOPATH® Packet Switching Service X.25 Interface Specification, Issue 2, January 1988

- NYNEX NTR-74252 INFOPATH® Packet Switching Service Asynchronous Interface Specification, Issue 2, January 1988

- Pacific Bell PUB L-780060-PB Public Packet Switching (PPS) - Technical Interface Specification, Issue 1, August 1989

- Southwestern Bell Telephone Technical Publication TP 76800, MicroLink II[SM] X.25/X.75 Reference, Issue 4, September 1994

- U S WEST USWTR 77359 DIGIPAC® Service Interface Specifications For Public Packet Switching Network, Issue E, May 1994

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2.2   Category 2, Type B - X.75 Packet Switched BSA (1002)

<u>Service Description</u>

The Type B Packet Switched BSA provides an ESP with X.75 access to the BOC packet switching network. The X.75 interface conforms to Recommendation X.75 of the International Telecommunication Union-Telecommunication Standardization Sector (ITU-TS) (formerly the International Telegraph and Telephone Consultative Committee [CCITT]).
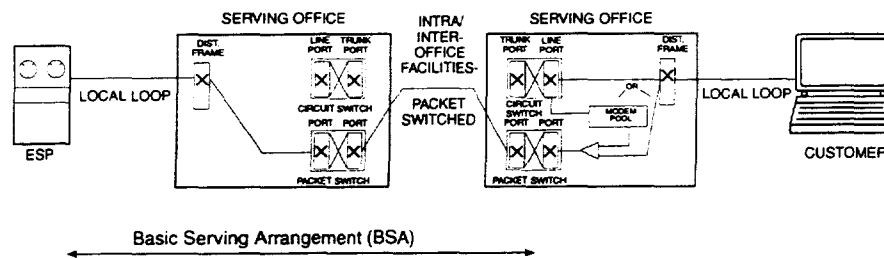
X.75 includes physical, link and packet level procedures. At the physical level data signaling rates of 9.6 kbps are supported over analog or digital facilities. Speeds of 56 kbps are supported over digital facilities only. The link level protocol supported at the interface is Link Access Protocol Balanced (LAPB). The main functions of the link level protocol are to ensure that the packets cross the network interface essentially error free and reach their destination in a correctly transmitted sequence. The network level access protocol provides the procedures required to set up, maintain and clear virtual calls.

Generic Name of BSA	Regional Company BSA Name
Category 2, Type B - X.75 Packet Switched BSA	AM - Packet Switched Network Service (X.75)
	BA - Public Data Network: X.75
	BS - PulseLink® Packet Switching - X.75
	NX - INFOPATH® Packet Switching Service
	PB - Public Packet Switching (X.75)
	SWB - Packet Switched - MicroLink II^{SM} (X.75 Version)
	USW - Packet Switching (X.75)

Packet Switching BSA
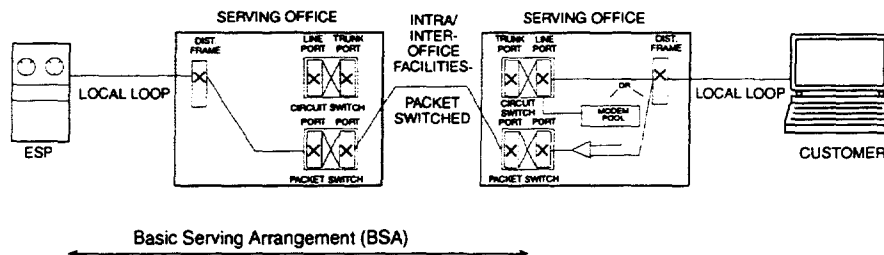
Basic Serving Arrangement (BSA)

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Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: Logical Channel, Flow Control Parameters, and Multiple Network Addresses.

Signaling

Signaling arrangements extend alerting information on metallic or fiber facilities from one customer premises location to another customer premises location. Dial (circuit-switched) access provides low- to moderate-throughput Public Packet Switched Network (PPSN) access through the voice telephone network. With dial-in access, a customer terminal and modem are attached to the Public Switched Telephone Network (PSTN) loop. The customer dials a North American Numbering Plan (NANP) address and the PSTN routes the call to a PPSN dial-up port. The PPSN answers the call with a modem supporting one of several modem protocols.

With dial-out access, a call is routed to a PPSN interface supporting dial-out service. At this interface, the access concentrator obtains the NANP address and uses the ITU-TS (formerly CCITT) V.25 calling procedures to instruct the PPSN modem to establish a physical connection with the customer via the PSTN.

Dedicated (nonswitched) access provides the customer with continuously available interfaces to the PPSN.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interface

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-301 Public Packet Switched Network Generic Requirements (PPSNGR) (replaces TR-TSY-301, Issue 2), Issue 2, December 1997

- TR-NPL-000011 Asynchronous Terminal and Host Interface Reference, Issue 1, March 1985

- Ameritech TR-NPL-000001 Public Packet Services Technical Interface Specifications, Issue 2, September 1988

- Ameritech TR-NPL-000003 Technical Interface Specifications for Asynchronous Service, Issue 2, May 1988

- Ameritech TR-NPL-000007 Digital Service Interface Specifications, Type 1, Issue B, December 1988

- Ameritech TR-NPL-000016 Technical Interface Specifications for X.75 Service, Issue 2, May 1988

- Bell Atlantic TR 72211 Interface Specification For The Bell Atlantic Public Data Network, Issue C, December 1991

- BellSouth TR-73515 PulseLink® X.75 Interface Specification, Issue B, April 1991

- BellSouth TR-73516 PulseLink® Physical Interface Specification, Issue C, September 1991

- NYNEX NTR-74250 INFOPATH® Packet Switching Service X.25 Interface Specification, Issue 2, January 1988

- Pacific Bell PUB L-780060-PB Public Packet Switching (PPS) - Technical Interface Specification, Issue 1, August 1989

- Southwestern Bell Telephone Technical Publication TP 76800, MicroLink II[SM] X.25/X.75 Reference, Issue 4, September 1994

- U S WEST USWTR 77359 DIGIPAC® Service Interface Specifications For Public Packet Switching Network, Issue E, May 1994

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3. Category 3 - Dedicated Basic Serving Arrangement

A dedicated BSA provides an ESP with a dedicated point-to-point connection through the network. This category of serving arrangements are available full-time so that individual calls are not set up and taken down. This BSA is capable of supporting analog or digital signals at various transmission rates. The transmission interface may be 2-wire or 4-wire, or derived from a variety of multiplexing alternatives (for example, Digital Signal (DS) level 0 from DS level 1, or DS1 from DS3). It is also capable of providing supervisory signaling in some configurations.

Route diversity may be available with this serving arrangement.

3.1 Category 3, Type A - Dedicated Metallic BSA (1015)

<u>Service Description</u>

The Dedicated Metallic BSA provides a non-switched channel between the ESP and the ESP's client for the transmission of low speed varying signals at rates up to 30 baud. This service can only be provided where metallic facilities are available.

Metallic dedicated services are nonswitched services used for applications such as alarm, pilot wire protective relaying, and direct current (DC) tripping protective relaying. Interoffice metallic facilities will be limited in length to a total of five miles per channel. Metallic dedicated service (called MT1 in TR-NPL-000336 reference documentation) provides a metallic or equivalent pair between an end user and the service provider's point of termination.

Metallic dedicated service MT1 may have a second end user point of termination bridged to the first.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type A - Dedicated Metallic BSA	BA - Dedicated Metallic NX - Dedicated - Metallic PB - Metallic Service SWB - Special Access - Metallic USW - Analog PLS - DCCS

Dedicated – Private Line – BSA
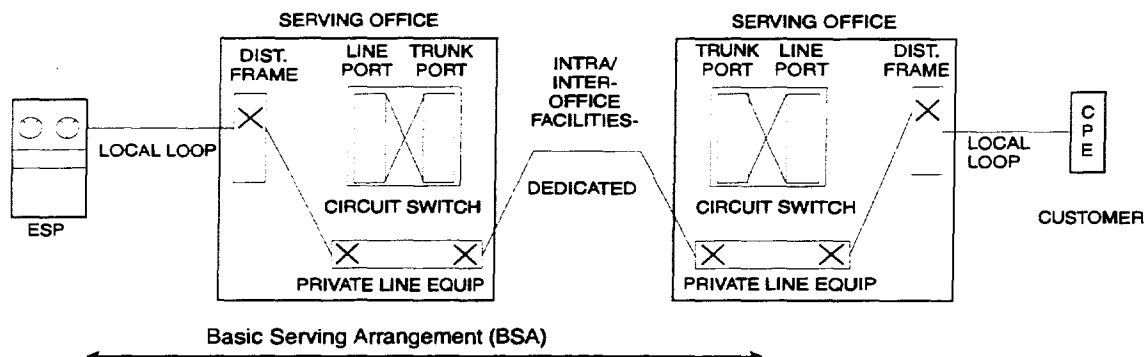
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be provision of services between customer designated premises through serving wire centers or between a customer designated premises and a telephone company hub.

Signaling

Metallic dedicated serving arrangements are available full-time and therefore signaling arrangements are not applicable.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical interface with the LEC for metallic services is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

Reference

- TR-NPL-000336 Metallic and Telegraph Grade Special Access Service Transmission Parameter Limits and Interface Combinations, Issue 1, October 1987

3.2   Category 3, Type B - Dedicated Telegraph BSA (1016)

Service Description

The Dedicated Telegraph BSA provides a non-switched channel between the ESP and the ESP's client for the transmission of binary signals at rates of 0 to 75 baud or 0 to 150 baud.

Telegraph dedicated services are nonswitched services used for applications such as teletypewriter, telegraph grade control/remote metering, telegraph grade channel, telegraph grade extension, and telegraph grade entrance facilities. Certain applications must be provided using metallic facilities, and may only be offered where appropriate metallic facilities are available.

Telegraph Special Access services TG1 and TG2 may be available.

— TG1 service provides transmission of asynchronous transitions between two current levels at rates up to 75 baud between an end user and the ESP's point of termination. This service may be furnished for half-duplex or duplex operation in a two-point or multipoint configuration. Neither direct current (DC) continuity of this service nor the capability to continuously transport varying alternating current (AC) is assured.

— TG2 service provides transmission of asynchronous transitions between two current levels at rates up to 150 baud between an end user and the ESP's point of termination. This service may be furnished for half-duplex or duplex operation in a two-point or multipoint configuration. Neither DC continuity of this service nor the capability to continuously transport varying AC is assured.

Telegraph services TG1 and TG2 may have active or passive multipoint-bridging, the maximum number of bridges to be determined by service application design limitations.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type B - Dedicated Telegraph BSA	BA - Dedicated Telegraph NX - Dedicated - Telegraph Grade PB - Telegraph Grade Service USW - Analog PLS - LSDS

Dedicated – Private Line – BSA
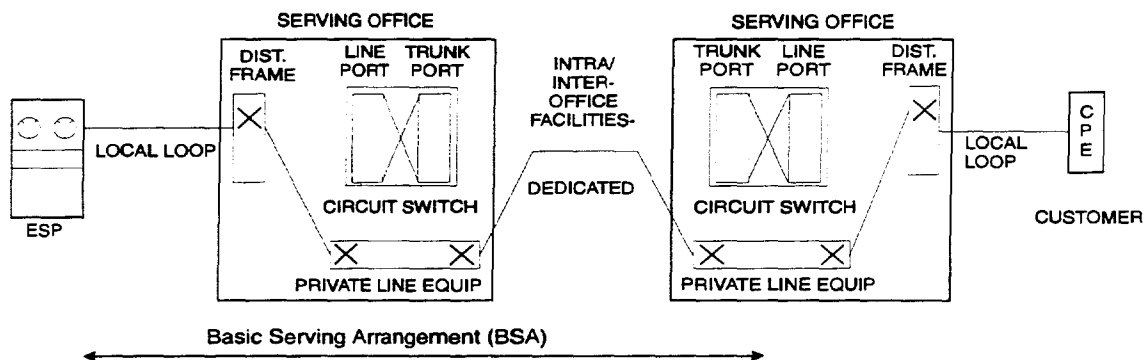
Basic Serving Arrangement (BSA)

UPDATED 7/31/98

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some of all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: half duplex or full duplex operation in a two-point or multipoint configuration.

Signaling

Telegraph dedicated serving arrangements are available full-time and therefore signaling arrangements are not applicable.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical interface with the LEC for metallic services is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. The NCI codes for the desired service must be specified by the customer when ordering telegraph grade services. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

Reference

- TR-NPL-000336 Metallic and Telegraph Grade Special Access Service Transmission Parameter Limits and Interface Combinations, Issue 1, October 1987

3.3   Category 3, Type C - Dedicated Voice Grade BSA (1017)

Service Description

The dedicated voice grade BSA provides an ESP with a dedicated connection through the network to the ESP's client. This BSA is capable of supporting the transmission of analog signals within an approximate bandwidth of 300 - 3000 Hz. The transmission interface may be 2-wire or 4-wire. Voice grade services are provided between service provider designated premises through serving wire centers or between a service provider designated premises and a telephone company hub. It is capable of providing various supervisory signaling alternatives.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type C - Dedicated Voice Grade BSA	AM - Direct Analog
	BA - Dedicated Voice-Grade
	BS - Dedicated - Private Line
	NX - Dedicated - Voice Grade
	PB - Voice Grade Service
	SWB - Special Access - Voice Grade
	USW - Analog PLS - VGS

Dedicated – Private Line – BSA
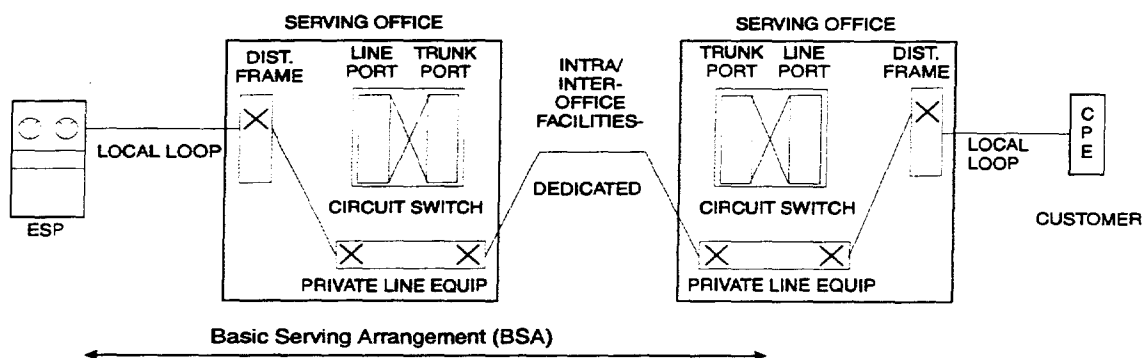
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: transfer arrangement, improved termination, data capability, telephoto capability, and signaling capabilities.

Signaling

Signaling capability provides for the process by which one customer premises alerts another customer premises on the same service with which it wishes to communicate. These signals are the means by which the end user initiates a request for service, holds a connection or releases a connection. Examples of signaling arrangements are: loop-start, ground-start, E&M, and reverse-battery.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- TR-NWT-000335 Voice Grade Special Access Services - Transmission Parameter Limits and Interface Combinations, Issue 3, May 1993

- TR-TSY-000965 IntraLATA Voice Grade Private Line Services Transmission Parameter Limits and Interface Combinations, Issue 1 - October 1989, Revision 1 - December 1989, Issue 2 - December 1991

- GR-342-CORE High-Capacity Digital Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-INS-000342)

3.4 Category 3, Type D - Dedicated Program Audio BSA (1018)

<u>Service Description</u>

The dedicated program audio BSA provides an ESP with a one-way non-switched channel to the ESP's client that can pass an analog signal up to 15000 Hz. This serving arrangement is usually provided for transmission of music, but it is capable of voice and data within the band pass limits. Nominal frequency bandwidths for this serving arrangement are: 50 to 15000 Hz, 200 to 3500 Hz, 100 to 5000 Hz, 300 to 2500 Hz, or 50 to 8000 Hz.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type D - Dedicated Program Audio BSA	AM - Dedicated Program Audio BA - Dedicated Program Audio BS - Dedicated Program Audio NX - Dedicated - Program Audio PB - Program Audio Service SWB - Special Access - Program Audio USW - Analog PLS - AS

Dedicated – Private Line – BSA
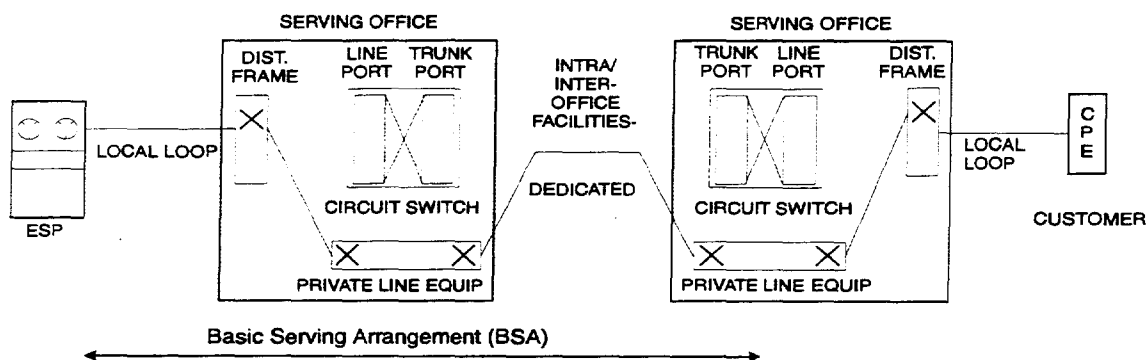
Basic Serving Arrangement (BSA)

<u>Alternatives</u>

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: stereo and gain conditioning.

<u>Signaling</u>

Program Audio services are available full-time and therefore signaling arrangements are not applicable.

<u>Transmission</u>

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance

characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-337 Program Audio Special Access and Local Channel Services, Issue 1, December 1995 (replaces TR-NPL-000337, Issue 1)

- TR-TSY-000431 15 kHz Digital Audio Terminal for Program or Television Requirements and Objectives, Issue 1, October 1987

- GR-342 High-Capacity Digital Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-INS-000342, Issue 1)

- TR-NPL-000339 Wideband Analog Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, October 1987

3.5 Category 3, Type E - Dedicated Video BSA (1019)

Serivce Description

The dedicated video BSA provides an ESP with a dedicated, broadband communications channel to the ESP's client. Applications may include (but are not limited to): full-time and part-time commercial broadcast quality television, noncommercial broadcast quality television, video teleconferencing, distance-learning applications, surveillance, closed-circuit television. The channel is capable of transmitting a standard 525 line/60 field monochrome or National Television Systems Committee (NTSC) color video signal and associated audio signals. The associated audio signal(s) may be either duplexed or provided as separate channels. Video services are provided between customer designated premises through Serving Wire Center(s) or between a customer designated premises and a telephone company hub.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type E - Dedicated Video BSA	AM - Dedicated Video
	BA - Dedicated Video Service
	BS - Dedicated Video
	NX - Dedicated - Video
	PB - Video Service
	SWB - Special Access - Video
	USW - Analog PLS - VS

Dedicated – Private Line – BSA
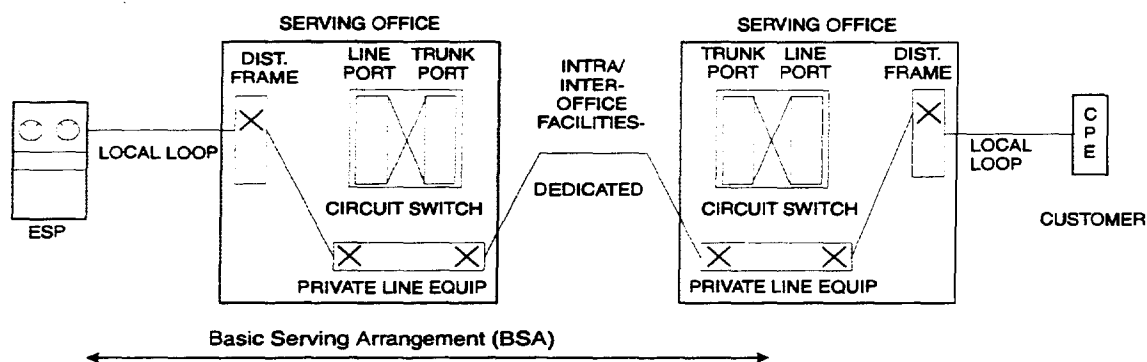
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: 5 or 15 Hz audio channels, duplexed or separate channel audio signals, and video/audio delay difference.

<u>Signaling</u>

Video services are available full-time and therefore signaling arrangements are not applicable.

<u>Transmission</u>

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

<u>Network Interfaces</u>

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes define the bandwidth and the provision of the audio signal(s) associated with a broadcast video channel. NCI codes are: (1) Total Conductors, (2) Protocol, (3) Impedance, (4) Protocol Options, and (5) Transmission Level Point (ignored for Television Special Access).

<u>References</u>

- GR-338 Television Special Access and Local Channel Services - Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-TSV-000338, Issue 2)

- TR-TSY-000431 15 kHz Digital Audio Terminal for Program or Television Requirements and Objectives, Issue 1, October 1987

- U S WEST Publication 77326 U S WEST Fiber Optic Commercial Video Services, Issue D, December 1994

3.6   Category 3, Type F - Dedicated Digital (< 64 kbps) BSA (1020)

Service Description

The dedicated digital (< 64 kbps) BSA provides an ESP with a 4-wire digital channel to the ESP's client This serving arrangement provides for digital transmission of synchronous serial data at primary rates of 2.4, 4.8, 9.6, 19.2, or 56 kbps, plus associated secondary channel rates of 2.4, 4.8, 9.6, 19.2, or 56 kbps. Error Detection/Correction is an inherent part of this BSA.

Digital Data special access services are nonswitched channels that provide the capability to transmit digital data between two end user points of termination or and end user point of termination and a service provider point of termination.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type F - Dedicated Digital (< 64 kbps) BSA	AM - Ameritech Base Rate Services
	BA - Digital Data Service
	BS - SynchroNet$^{®}$ /DDS
	NX - Dedicated - Digital Data
	PB - Digital Data Service, Private Line Services
	SWB - Special Access - MegaLink^{SM} Data
	USW - Digital Data Service

Dedicated – Private Line – BSA
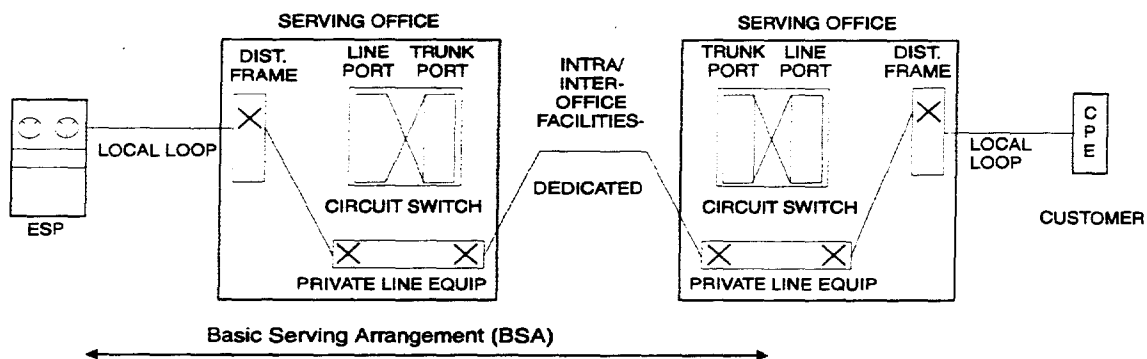
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: Transfer Arrangement.

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[SM] MegaLink is a service mark of Southwestern Bell Telephone.

Signaling Arrangements

These services are available full-time and therefore supervisory signaling arrangements are not applicable. The signaling service is synchronous with timing provided through the LEC's facilities to the end user on the received bit stream. Individual calls are not set up and taken down.

Transmission Capabilities

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- TR-NWT-000341 Digital Data Special Access Service Transmission Parameter Limits and Interface Combinations, Issue 2, February 1993

- U S WEST document 77312 U S WEST Digital Data Service, Technical Description, Issue D, October 1994

3.7 Category 3, Type G - Dedicated High Capacity Digital (1.544 Mbps) BSA (1021)

Service Description

The dedicated high capacity digital (1.544 Mbps) BSA provides an ESP with a dedicated channel. High Capacity Digital service is defined as a service that provides two-point, private-line, full duplex transmission at 1.544 Mbps isochronous serial data with a payload of 1.536 Mbps between an end user and an end user or between an end user and a LEC central office.

In some cases, this BSA can be provisioned for dedicated transport of Extended Superframe Format (ESF) datachannel capability.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type G - Dedicated High Capacity Digital (1.544 Mbps) BSA	AM - Ameritech DS1 Services BA - High Capacity Digital Service BS - MegaLink®/HiCap NX - Dedicated Digital - 1.544 Mbps PB - High Capacity Services (1.544 Mbps) SWB - Special Access - High Capacity (1.544 Mbps) USW - DS1 Service

Dedicated – Private Line – BSA
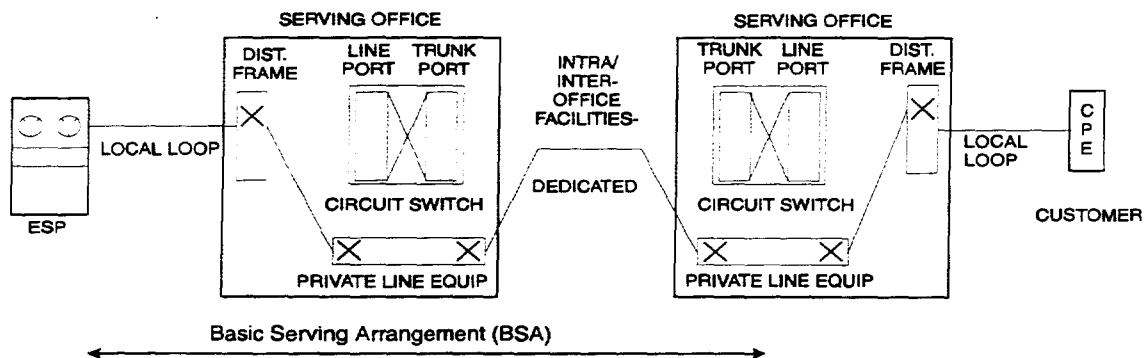
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette

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for the reference information where LEC defined alternatives may be found. An example of a potential alternative may be: transfer arrangement.

Signaling

The signaling service is isochronous with timing provided through the LEC's facilities to the end user on the received bit stream. Individual calls are not set up and taken down.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-342 High-Capacity Digital Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-INS-000342, Issue 1)

- GR-54 DS1 High Capacity Digital Service End User Metallic Interface Specifications, Issue 1, December 1995 (replaces TR-NPL-000054, Issue 1)

- TR-TSY-000312 Functional Criteria for the DS1 Interface Connector, Issue 1, February 1988

- Ameritech document AM-TR-OAT-000033, DS1 Customer Installation: Metallic Interface, Issue B, January 1990

- Pacific Telesis technical reference PUB L-780021-PB/NB Requirements and Objectives for Network Interface Unit and Mounting, Issue 2, November 1994

- U S WEST engineering publication 77327 Digicom® III High Capacity Digital Access Service "Joint Designed" Network Channel Interface, December 1988

® Digicom is a registered trademark of U S WEST Communications, Inc.

## 3.8   Category 3, Type H - Dedicated High Capacity Digital (>1.544 Mbps) BSA (1022)

Service Description

The dedicated high capacity digital (>1.544 Mbps) BSA provides an ESP with a dedicated channel to the ESP's client via a digital facility. High Capacity Digital service is defined as a service that provides two-point, private-line, transmission at speeds above 1.544 Mbps between an end user and an end user or between an end user and a LEC central office. Individual calls are not set up and taken down. The ESP must specify the desired transmission speed as an alternative with this BSA.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type H - Dedicated High Capacity Digital (>1.544 Mbps) BSA	AM - Ameritech DS3 Services
	BA - High Capacity/Lightwave Service
	BS - LightGate® /HiCap
	NX - Dedicated - Digital - 45 Mbps
	PB - High Capacity Services (>1.544 Mbps)
	SWB - Special Access - High Capacity MegaLink[SM] Custom
	USW - DS3 Service

Dedicated – Private Line – BSA
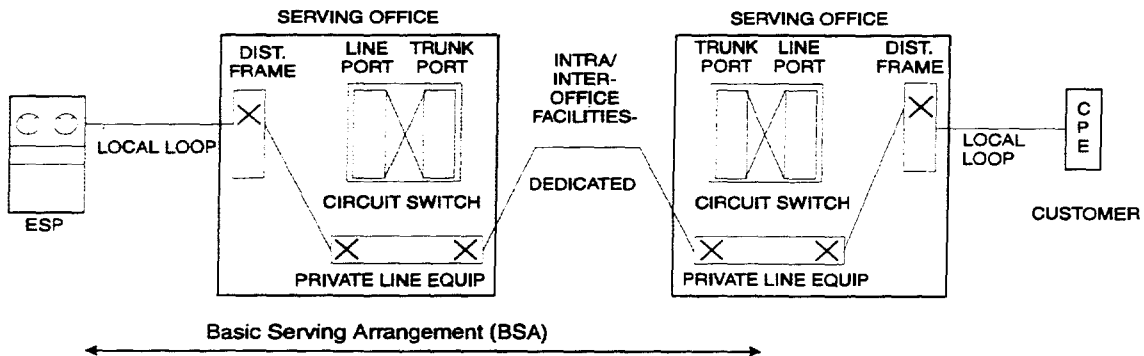
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: transmission speed and transfer arrangement.

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[SM] MegaLink is a service mark for Southwestern Bell Telephone.

Signaling

The signaling service is isochronous with timing provided through the LEC's facilities to the end user on the received bit stream. Individual calls are not set up and taken down.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-342 High-Capacity Digital Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-INS-000342, Issue 1)

- U S WEST engineering publication 77327 Digicom® III High Capacity Digital Access Service "Joint Designed" Network Channel Interface, December 1988

- U S WEST publication 77324 U S WEST DS3 Service, Issue C, April 1993.

® Digicom is a registered trademark of U S WEST Communications, Inc.

3.9   Category 3, Type I - Dedicated Alert Transport BSA (1023)

Service Description

The dedicated alert transport BSA using derived local channel technology and a LEC provided scanner offers ESPs a 24 hour supervised monitoring capability using compatible local loop access lines.

The scanner continuously monitors the status of all clients. A host processor monitors all scanners and, in response to a change in status, will identify the subscriber from which the alert condition originates and notify the appropriate ESP.

This serving arrangement utilizes derived channels which comply with Underwriter's Laboratories (UL) AA and National Fire Protection A and National Fire Protection Association (NFPA) requirements.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type I - Dedicated Alert Transport BSA	BA - REACT^{SM} BS - WATCHALERT$^{®}$ NX - PULSENET^{SM} Alert Transport Service PB - POLLSTAR^{SM} DLC Security Transport

Dedicated – Private Line – BSA
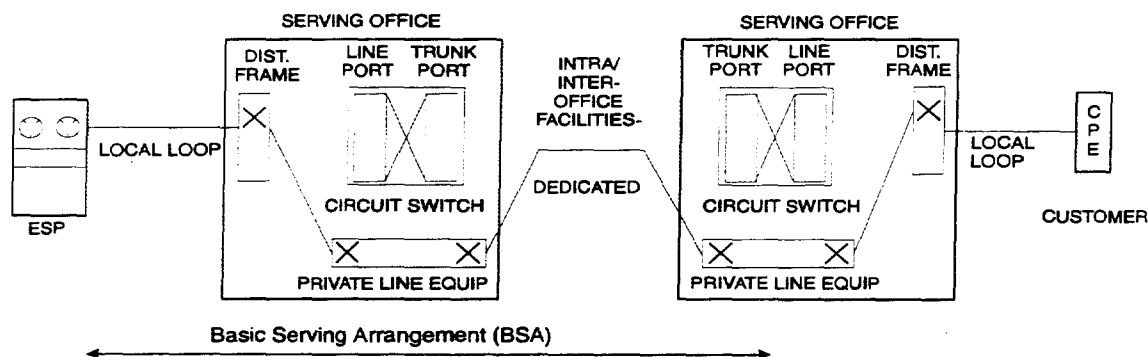
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found.

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$^{®}$ WATCHALERT is a registered service mark of BellSouth Corporation.

^{SM} PULSENET is a service mark of NYNEX.

^{SM} POLLSTAR is a service mark of Pacific Bell.

Signaling

Dedicated serving arrangements are available full-time and therefore supervisory signaling arrangements are not applicable.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. The NCI codes for the desired service must be specified by the customer when ordering metallic services. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

Reference

- BellSouth Publication TR-73530 Description of the Network Interface at an Alarm Agency to WATCHALERT® Service, Issue A, June 1989

® WATCHALERT is a registered service mark of BellSouth Corporation.

3.10   Category 3, Type J - Dedicated Derived Channel BSA (1024)

Service Description

The dedicated derived channel BSA provides one or more low-speed dedicated data channels (e.g. 9.6 kbps) derived on a dial tone line in addition to the voice channel. The customer is provided with a multiplexed interface requiring the use of a data-voice multiplexer (DVM) on the customer's premises. A matching DVM in the central office splits off the data channel(s) from the voice path before the voice path enters the circuit switch.

Several options may be available for extending the derived data channel to the ESP, including a low-speed private line, a multiplexing arrangement whereby several derived channels are transmitted on a higher speed private line, or a data voice multiplexer similar to the equipment employed on the end user's access link resulting in "back-to-back" derived channels.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type J - Dedicated Derived Channel BSA	BA - Dedicated Derived Channel BS - Derived Data Channel Service NX - DOVPATH$^{®}$ Transport Service SWB - DovLink^{SM} USW - Simultaneous Voice and Data Service

Dedicated – Private Line – BSA
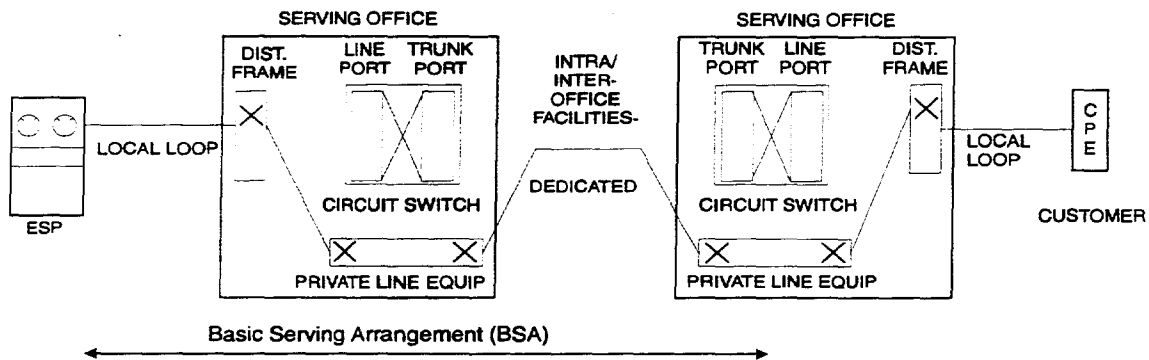
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found.

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^{SM} DovLink is a service mark of Southwestern Bell Telephone Company.

Signaling

Dedicated serving arrangements are available full-time and therefore signaling arrangements are not applicable.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. The NCI codes for the desired service must be specified by the customer when ordering metallic services. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

Reference

- SR-NPL-000665 Network Interface Specification: DOV/DVM Type 1, Issue 1, January 1987

3.11 Category 3, Type K - Dedicated Digital (64 Kbps) BSA (1037)

<u>Service Description</u>

Dedicated Digital (64 Kbps) Service will provide a channel for duplex four-wire transmission of synchronous serial data at 64 Kbps. The channel provides a synchronous service with timing provided by the telephone company. The 64 Kbps channel will be provided between two customer designated premises or between a customer designated premise and a telephone company serving wire center.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type K - Dedicated Digital (64 Kbps) BSA	AM - Ameritech Base Rate Service
	BA - Digital Data Service 64 KBS
	BS - DS-0 Transport Facilities
	NX - (see NYNEX note) *
	USW - Digital Data Service - 64 Kbps

Dedicated – Private Line – BSA
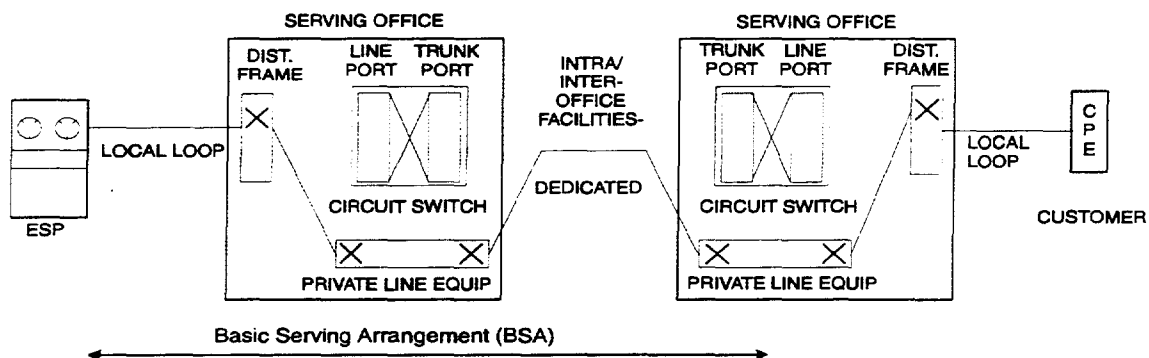
Basic Serving Arrangement (BSA)

<u>Alternatives</u>

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: Transfer Arrangement.

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  Note: NYNEX offers 64 Kbps service associated with the Dedicated High Capacity Digital (1.544 Mbps) BSA.

Signaling Arrangements

These services are available full-time and therefore supervisory signaling arrangements are not applicable. The signaling service is synchronous with timing provided through the LEC's facilities to the end user on the received bit stream. Individual calls are not set up and taken down.

Transmission Capabilities

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options. The NCI codes for the service desired must be specified by the customer when ordering. Only certain code combinations are compatible, as listed in TR-NWT-000341.

References

- TR-NWT-000341 Digital Data Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 2, February 1993.

- Ameritech Technical Reference TR-OAT-00070 Issued October 1990, Ameritech OPTINET 64 Interface Specifications, Issue 1, September 1990.

- BellSouth Technical Reference TR 73545 SynchroNet Service Network Interface Specifications, Issue D September 1994.

4. Category 4 - Dedicated Network Access Link BSA (1025)

Service Description

The dedicated network access link (DNAL) BSA provides a dedicated data channel between the ESP's termination and a designated central office which contains the specific features required by the ESP. The DNAL is used to transmit network information or network control information from the ESP to the network (e.g., activate a message waiting indicator), or to deliver network information or network control information from the network to the ESP (e.g. calling number identification over a message desk interface). The type of DNAL BSA used will determine the bandwidth alternatives and capabilities available to the ESP.

The DNAL BSA can support one-way or two-way transmission depending on the alternatives used.

Route diversity may be available with this serving arrangement.

Generic Name of BSA	Regional Company BSA Name
Category 4 - Dedicated Network Access Link BSA	AM - Dedicated Network Access Link
	AM - Type A-Signal Transfer Point Access (STP) (2011)
	AM - Type B-Circuit Switch Facility Control (CSFC) (2012)
	AM - Type C-Simplified Message Desk Interface (SMDI) (2013)
	AM - Type D-Simplified Message Desk Interface-Expanded (SMDI-E) (2014)
	AM - Type E-Ameritech Reconfiguration Service (2015)
	AM - Type F-Alarm Service (2016)
	AM - Type G-Ameritech Switch to Computer Applications (ASCAI) (2017)
	BA - Dedicated Network Access Link
	BS - Private Line/Special Access
	NX - (see NYNEX note)*
	PB - Dedicated Network Access Link
	SWB - Special Access - Metallic
	SWB - Special Access - Voice Grade
	SWB - Switched Access Dedicated Network Access Link
	USW - Analog PLS

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* Note: NYNEX offers dedicated channels for specific network information or network control information as part of the appropriate BSA or BSE that provides the specific capability.

Category 4 – Dedicated Network Access Link – BSA
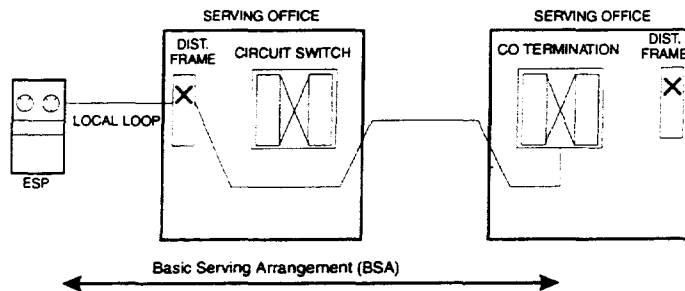
Basic Serving Arrangement (BSA)

Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found.

Signaling

Signaling capability provides for the process by which one customer premises alerts another customer premises on the same service with which it wishes to communicate. These signals are the means by which the end user initiates a request for service, holds a connection or releases a connection.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- TR-NWT-000335 Voice Grade Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 3, May 1993 (Component of TR-TSY-000333)

- TR-NPL-000336 Metallic and Telegraph Grade Special Access Services - Transmission Parameter Limits and Interface Combinations, Issue 1, October 1987 (Component of TR-TSY-000333)

BSE and CNS Descriptions

The following section contains descriptions of BSEs and CNSs. They are arranged alphabetically by generic name in the appropriate BSA categories. The BSA categories are:

1.   Circuit Switched

2.   Packet Switched

3.   Dedicated

4.   Dedicated Network Access Link

1. Technical Descriptions for Circuit Switched Serving Arrangements

Alternate Routing (1041)

When all the circuits in an ESP's circuit switched trunk serving arrangement with alternate routing capability are busy due to traffic volume the network will attempt to complete subsequent calls to an alternate route served by that switch as previously specified by the ESP.

Generic Name of ONA Service	Product Name	BSE or CNS
Alternate Routing	AM - Alternate Routing	BSA*
	BA - Alternate Traffic Routing	BSE
	BS - Alternate Routing	BSE or CNS
	NX - Alternate Routing	BSE
	PB - Alternate Traffic Routing	BSA *
	SWB - Alternate Traffic Routing	BSE
	USW - Alternate Traffic Routing	BSE

FEATURE OPERATION:

Alternate routing allows different routes to overflow in different ways, even though they share the same physical trunk or circuit set. Alternate routing should always be specifiable without reference to calling line or called trunk, circuit, or line set.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS™	5ESS®	DMS-100®
Earliest Generic Release	1AE8A	5E2(2)	BCS17

2. The routing and charging function consists of interpreting the dialed digits, directing the connection to a trunk or circuit, directing the transmission of call setup data to the distant end, and determining what charge treatment to

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* For Ameritech and Pacific Bell, this is a Circuit Switched BSA Trunk Type feature

ESS is a trademark and 5ESS is a registered trademark of AT&T.

DMS is a registered trademark of Northern Telecom.

use. This process uses information associated with the calling line, dialed digit information, and route availability data. Existing stored program controlled systems translate the dialed digit combination into classes of dialed digit combinations. These classes, along with the calling line associated indicator, are translated into a charge index and a primary route index. The primary route index defines the call setup data to be transmitted, a set of trunks, circuits, and an alternate route index to be used if the initial set of trunks or circuits are unavailable.

3. The 1A ESS machine provides for the ability to have 16 Route Indexes on Route Transfer Keys (16 keys). Through the operation of these keys it is possible to transfer outgoing traffic from one trunk group to another trunk group. It is also possible to split a particular trunk group in order to control the traffic offered to a specific quantity of trunks instead of offering all traffic to all of the trunks. The actual transfer key may be either located in the 1A ESS office or located on the ESP's premises.

4. In the 5ESS, one primary route and up to four alternate routes may be specified. These routes are assigned at the establishment of initial service. The alternate routes are fixed and cannot be enabled via a key operation.

5. The DMS-100 has several methods to provide alternate routing. The software methods used are similar to the 5ESS, in that the alternate routes are fixed and do not have the potential to be controlled manually as in the 1A ESS. The type of alternate routing method to use depends on the type of trunks used for this feature. Standard trunking can have up to eight alternate routes.

6. In some regional companies, this service may be limited to trunk side access utilizing Feature Groups B and D protocol, Feature Group D protocol only, trunk side BSA - 950 option, trunk side BSA - 10XXX (and/or 101XXXX) option, or trunk side BSA 950 option and 10XXX (and/or 101XXXX) option.

7. References:

   • LSSGR FR-64 (formerly FR-NWT-000064), Call Processing Section 5, Issue 1, December 1997, GR-505 (replaces TR-TSY-000505).

This service, if offered as a BSE, is associated with the Circuit Switched Trunk basic serving arrangement.

Answer Supervision With A Line Side Interface (1042)

Answer Supervision is an electrical signal passed back to the calling end of a switched telephone connection indicating that the called line has gone off hook. This signal can be used by terminal equipment (PBX, pay telephone, call diverter, etc.) connected to the calling line to determine that the call has entered the talking state and that charging may commence. Previously this signal was available on trunks, not on lines.

The Answer Supervision signal consists of a reversal of the telephone line bias voltage, the ring normally being more negative than the tip. At the time of answer or shortly thereafter, tip and ring are interchanged by the switching machine, so that the tip is now more negative than the ring. This reversal persists at least until the called line goes on hook, and possibly until the calling line goes on hook. All of the other electrical characteristics of a line equipped for answer supervision are identical to those of a normal line.

Generic Name of ONA Service	Product Name	BSE or CNS
Answer Supervision With A Line Side Interface	AM - Answer Supervision With Line Side Interface	BSE
	BA - Answer Supervision with a Line Side Interface	BSE
	BS - Answer Supervision	BSE
	PB - Answer Supervision (Line Side)	BSE
	USW - Answer Supervision (Line Side)	BSE

FEATURE OPERATION:

Answer Supervision is a service most useful to a "device" like a PBX or "smart" pay telephone. (This does not preclude its use on a line directly connected to a telephone set, although the battery reversal may make the set's DTMF pad inoperative during the talking state of the call.)

1. The "device" (PBX, pay telephone, etc.) goes off-hook and dials a call in the normal way.

2. After dialing is completed, the call is switched through the network over the usual array of network components, which may include tandem trunks, tandem switches, Interexchange Carriers, and finally, a terminating local switch.

3. When the called party answers, the terminating office changes the supervisory state of the incoming trunk to off-hook from on-hook.

4. This state change is passed back toward the originating local office by each intervening office and trunk.

5. The originating local office uses this state change to note the time of answer for billing purposes. It also causes the line circuit of the line (equipped for Answer Supervision) to reverse the polarity of the battery feed toward the "device" that placed the call.

6. When the called party hangs up, the state change, off-hook to on-hook, is transmitted back to the originating local office. Depending on its software realization of the feature, the originating local switch may or may not pass this signal to the "device" by changing the battery polarity back to normal. In either case the originating local switch begins "calling party hold" timing on the originating line.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	5ESS	DMS-100
Earliest Generic Release	5E8	BCS24

This feature may be available on the 1A ESS switch with custom hardware and software.

2. Answer Supervision requires a special line card in the DMS-100.

3. Battery reversal may lag actual answer by upwards of 2 seconds. This is a function of accumulation of network elements processor time (delay) in the path of the call connection.

4. Answer Supervision is not provided when calling certain types of non-billing lines.

5. Answer Supervision is not provided to connections to OSPS, TSPS or TOPS systems due to the billing for these type of calls being handled at the operator system and not at the local office. Answer Supervision is a function resulting for a local recording of the billing record.

6. Answer Supervision may be provided before actual answer when calling certain types of ACD systems.

7. Battery reversal signals are not passed by the carrier systems that are normally used for pair gain and for foreign exchange service. Answer Supervision is compatible with foreign exchange service provided over physical cable facilities.

8. Many dial long line circuits, digital loop carrier systems or non-metallic line side facilities do not pass battery supervision.

9. This service is intended to be used by compatible terminal equipment. Many DTMF telephones are polarity sensitive and do not dial when the line voltage is reversed.

10. References:

   • GR-506 LSSGR: Signaling for Analog Interfaces (A module of LSSGR, FR-64) Issue 1, June 1996, Rev. 1, November 1996 (replaces TR-TSY-000506, Issue 3)

   • SR-2275, Bellcore Notes on the Networks, Issue 3, December 1997 (replaces SR-TSV-002275, Issue 2)

   • GR-334-CORE, Switched Access Service: Transmission Parameter Limits and Interface Combinations, Issue 1, June 1994 (replaces TR-NWT-000334, Issue 3)

   • TR-NWT-000335, Voice Grade Special Access Service - Transmission Parameter Limits & Interface Combinations, Issue 3, May 1993

   • Ameritech Answer Supervision With Line Side Interface Specifications, AM-TR-MKT-000071, Issue 1, December 1990

This service is associated with the Circuit Switched Line basic serving arrangement.

Automatic Callback (1043)

Automatic Callback (CLASS^{SM}) feature is an *outgoing* call management feature that allows the customer to automatically place a call to the last number called. It does not matter whether the last number called was busy or idle, answered or unanswered. If the called line is busy, the called line will be checked periodically and the customer will be notified by a special ring when the called line becomes idle. The customer can use the phone for incoming and outgoing calls while waiting for the special ringback. This capability requires that both the originating and terminating central offices be equipped with Common Channel Signaling (CCS) SS7 and be interconnected by SS7.

Generic Name of ONA Service	Product Name	BSE or CNS
Automatic Callback	AM - Repeat Dialing	CNS
	BA - Repeat Call	CNS
	BS - Repeat Dialing	CNS
	NX - Repeat Dialing	CNS
	PB - Repeat Dialing	CNS or BSE
	SWB - Call Cue$^{®}$	CNS
	USW - Continuous Redial	CNS

FEATURE OPERATION

The customer must contact the telephone company to initiate Automatic Callback service. A service order is required. Once the appropriate translations have been made to the customer's line, the customer may activate the service by using the service access code *66 (1166 for rotary dial), and may deactivate the service, to cancel any outstanding Automatic Callback requests, by using *86 (1186 for rotary dial).

Upon activation of Automatic Callback the called line is checked for busy/idle status and class of service. If the called line is idle and the class of service is permissible, call setup is attempted. If the called line is busy, the customer receives an announcement stating the called line is busy and the line will be checked periodically for busy/idle status. When the line becomes free the customer will hear a special ring. Upon answering the special ring, one of the following happens:

1. Call setup is attempted, the customer hears audible ringing while the called party receives power ringing. Or

2. The customer receives an announcement indicating the following:

   — 1A ESS & 5ESS: The called line has become busy again, hang up and try your call again. (This terminates Automatic Callback for this activation.) The customer can reactivate Automatic Callback by again using the service access code.

   — DMS-100: The called line has become busy again, monitoring of the line will resume, hang up and wait for the special ringback.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

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^{SM} CLASS is a service mark of Bellcore (Bell Communications Research, Inc.)

$^{®}$ Call Cue is a registered service mark of Southwestern Bell Telephone Company.

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE10*	5E5	BCS28

Note: * Available on intraoffice basis with generic 1AE9.

2. The serving central office switch must be equipped with the appropriate CLASS[SM] Automatic Callback software and hardware. In order for this service to work on an interoffice basis, both the originating and terminating switches must be equipped with the CLASS and Common Channel Signaling (CCS) SS7 software and hardware and the interoffice trunks must be converted to SS7. This service is only offered on an intraLATA basis at this time.

3. This service is a "line" service and therefore cannot be assigned to subscribers with trunk terminations (i.e., PBX with DID). This service is also unavailable to customers that have denied originating treatment and multiline hunt groups that cannot have ringback directed to the calling station. In addition, because of the special ringing, this service may not work where channel banks (FX service), MFTs or bridge lifters are used (depending on circuit design).

4. The special ringing that the customer hears when call setup is being attempted consists of 2 short rings and 1 long ring in 6 seconds. Some telephone companies use this pattern for more than one service.

5. There are some digital loop carrier plug-ins that will not transmit the required special ringing.

6. The customer can have multiple Automatic Callback activations in effect concurrently.

7. Automatic Callback cannot be activated towards a line that has Call Forwarding Variable or Selective Call Forwarding activated. If the service cannot be activated, the caller is routed to a denial announcement or tone.

8. In some electronic key sets, power ringing generates a preset ringing pattern regardless of the ringing pattern generated by the originating central office. Therefore customers with these electronic sets may not be able to differentiate regular ringing for incoming calls from the special ringing for Automatic Callback.

9. The length of time the called line is monitored for busy/idle status is a telephone company settable parameter ranging from 16-45 minutes. The interval is set on a per switch basis and is generally the same throughout a regional company.

10. The customer can use the telephone for incoming and outgoing calls while waiting for the special ringback. However, the special ringback will not be attempted while the customer is using the telephone.

11. References:

   • TR-NWT-000215 CLASS[SM] Feature: Automatic Callback (A Module of LSSGR, FR-64 [formerly FR-NWT-000064]), Issue 3, June 1993.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

[SM] CLASS is a service mark of Bellcore (Bell Communications Research, Inc.)

Automatic Recall (1044)

Automatic Recall (CLASS^{SM}) is an incoming call management feature that allows the customer to automatically call back the last incoming number without having to know the number that called. If the called line is busy, the called line will be checked periodically and the customer will be notified by a special ring when the called line becomes idle. This capability requires that both the originating and terminating central offices be equipped with Common Channel Signaling (CCS) SS7 and be interconnected by SS7.

Generic Name of ONA Service	Product Name	BSE or CNS
Automatic Recall	AM - Automatic Callback	CNS
	BA - Return Call	CNS
	BS - Call Return	CNS
	NX - Call Return	CNS
	PB - Call Return	CNS
	SWB - Call Return ^{SM}	CNS
	USW - Last Call Return	CNS

FEATURE OPERATION:

The customer must contact the telephone company to initiate Automatic Recall service. A service order is required. Once the appropriate translations have been made to the customer's line, the customer activates the service by dialing the service access code *69 (1169 for rotary dial), then depending on how the Local Exchange Company chooses to implement Automatic Recall, one of the following happens:

- One-Level Activation Procedure

    Upon activation using *69 (1169 for rotary dial), the called line is checked for busy/idle status and class of service. If the called line is idle and the class of service is permissible, call setup is attempted. If the called line is busy, the customer receives an announcement stating the called line is busy. The line will be checked periodically for busy/idle status and when the line becomes idle the customer will hear a special ring. Upon answering the special ring, one of the following happens:

1. Call setup is attempted, the customer hears audible ringing while the called party receives power ringing. Or

2. The customer receives an announcement indicating the following:

    1A ESS & 5ESS: The called line has become busy again, hang up and try your call again. (This terminates Automatic Recall for this activation.) The customer can reactivate Automatic Recall by again using the service access code.

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^{SM} CLASS is a service mark of Bellcore (Bell Communications Research, Inc.)

^{SM} Call Return is a service mark of Southwestern Bell Telephone Company.

DMS-100: The called line has become busy again, monitoring of the line will resume, hang up and wait for the special ringback.

- Two-Level Activation Procedure:

    Upon activation using *69 (1169 for rotary dial), an announcement is provided informing the customer that Automatic Recall has been accessed. If the incoming number is valid, the number, date and time of the call is voiced back to the customer. (If the number is marked private then a private indication is voiced back to the customer instead of the number.) The customer is then instructed to dial "1" to activate Automatic Recall or hang up to abort the request. If the customer dials "1", the service proceeds as described above under the One-Level Activation Procedure.

To cancel all outstanding Automatic Recall requests, the customer may deactivate the service by using *89 (1189 for rotary dial).

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE10*	5E5	BCS28

Note: * Available on intraoffice basis with generic 1AE9.

2. The serving central office switch must be equipped with the appropriate CLASS[SM] Automatic Recall software and hardware. In order for this service to work on an interoffice basis, both the originating and terminating switches must be equipped with the CLASS and Common Channel Signaling (CCS) SS7 software and hardware and the interoffice trunks must be converted to SS7. This service is only offered on an intraLATA basis at this time.

3. This service is a "line" service and therefore cannot be assigned to subscribers with trunk terminations (i.e., PBX with DID). This service is also unavailable to customers that have denied originating and denied terminating treatment and multiline hunt groups that cannot have ringback directed to the calling station. In addition, because of the special ringing, this service may not work where channel banks (FX service), MFTs or bridge lifters are used (depending upon circuit design).

4. The special ringing that the customer hears when call setup is being attempted consists of 2 short rings and 1 long ring in 6 seconds. Some telephone companies use this pattern for more than one service.

5. There are some digital loop carrier plug-ins that will not transmit the required special ringing.

6. The customer can have multiple Automatic Recall activations in effect concurrently.

7. Automatic Recall cannot be activated towards a line that has Call Forwarding Variable or Selective Call Forwarding Activated. If the service cannot be activated, the caller is routed to a denial announcement or tone.

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8. In some electronic key sets, power ringing generates a preset ringing pattern regardless of the ringing pattern generated by the originating central office. Therefore customers with these electronic sets may not be able to differentiate regular ringing for incoming calls from special ringing for Automatic Recall.

9. The length of time the called line is monitored for busy/idle status is a telephone company settable parameter ranging from 16-45 minutes. The interval is set on a per switch basis, and is generally the same throughout a regional company.

10. The customer can use the telephone for incoming and outgoing calls while waiting for the special ringback. However, the special ringback will not be attempted while the customer is using the telephone.

11. References:

   - TR-NWT-000227 CLASS^{SM} Feature: Automatic Recall (A Module of LSSGR, FR-64 [formerly FR-NWT-000064]) Issue 3, June 1993.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

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^{SM} CLASS is a service mark of Bellcore (Bell Communications Research, Inc.)

Call Detail Recording Reports (1045)

The Call Detail Recording capability will provide the customer with a data record of all completed calls made to a designated telephone number. The call details will not be delivered in real time but as a paper printout or via magnetic tape on a weekly basis (or mutually agreed upon time interval).

Generic Name of ONA Service	Product Name	BSE or CNS
Call Detail Recording Reports	BA - Call Detail Recording Reports	BSE
	BS - Call Detail Information	BSE
	NX - Monthly Detailed Recording	AN
	SWB - Recording Service	AN
	USW - Access Service Billing Information	BSE

FEATURE OPERATION:

This service is the recording of the details of the customer messages and, when requested by the customer, the provision of those details to the customer. This service is ordered through the telephone company's appropriate tariffs or on an individual case basis.

When the capability is ordered the following detail will be provided: originating billing telephone number (ANI), terminating telephone number if dialed before carrier cut through (called number), connect time (time of day the call originated), elapsed time (duration of the call), date of the call. If the capability is ordered with the Voice Grade Circuit Switched BSA, the Carrier Identification Code (CIC) of the customer is also provided.

The Call Detail Report will be sorted in the following order:

Terminating Number

Originating Number

Date

Time of Day

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. Call Detail Recording capability will only record intraLATA calls.

2. The record format will be in the EMR/EMI standard format.

3. Recording is provided 24 hours per day seven days a week.

4. Telephone companies provide this service in their operating territory. This service may be provided on a state or end office basis. The information provided may vary by company.

5. Telephone companies can provide for the recording of all the customer's messages, provided that they are accessible by the telephone company's recording equipment. The recording equipment will be provided at locations selected by the telephone companies.

6. In some regional companies, this service may be limited to one, two or various combinations of Feature Group A protocol service, Feature Group B protocol service, or Feature Group D protocol service.

7. References:

   - GR-610-CORE, Message Detail Recording (MDR), Issue 1, November 1993, Revision 1 - December 1994, Revision 2 - June 1995.

   - TR-TSY-000615, Generic Requirements for Message Detail Recording (MDR) Access Interfaces, Issue 1, July 1990.

   - GR-1100, Bellcore Automatic Message Accounting Format (BAF) Requirements, Issue 2, December 1997, (replaces TR-NWT-001100, Issue 2)

This service, if offered as a BSE, is associated with the Circuit Switched Line and Trunk basic serving arrangements.

Call Forwarding - Busy Line Intraswitch (1046)

Call Forwarding Busy Line (CFBL) is a central office software capability that allows a client to have an incoming call redirected to another Directory Number (DN) if the number dialed (the client's number) is in a busy condition. The service is activated by a service order. A call forwarded due to a busy condition would always forward to the preprogrammed number (selected at the time of the service order). The called number and the redirected number must be in the same central office switch. The service is deactivated or the preprogrammed number is changed by a service order.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Busy Line Intraswitch	AM - Busy Line Transfer	CNS
	BA - Fixed Call Forwarding	CNS
	BA - Call Forwarding Busy Line/Don't Answer	CNS
	BS - Call Forwarding Busy Line	CNS
	NX - Call Forwarding 2	CNS
	PB - Call Forward Busy Line	CNS
	SWB - Call Forwarding Busy Line	CNS
	USW - Call Forwarding Busy Line	CNS
	USW - Call Forwarding Busy Line/Don't Answer	CNS

FEATURE OPERATION:

This feature is activated/deactivated by a service order. The "forward to" number is also selected and preprogrammed at the time of the service order. (Refer to the capabilities called "Call Forwarding - Busy Line or Don't Answer - Customer Control of Activation/Deactivation" and "Call Forwarding - Busy Line or Don't Answer - Customer Control of Forward-To Number" for the services with customer control.)

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE8A	5E2(2)	BCS24

2. Multiline customers can have CFBL on each line if desired.

3. Calls may be forwarded to any telephone number, including DID numbers, served by the same central office that serves the base station.

4. Subscribers may have CFBL with Call Forwarding Don't Answer (CFDA), Call Forwarding Variable (CFV), and Call Waiting (CW). If a station has CFV and CFBL or CFDA active, then CFV will override the CFBL and/or CFDA features. If a station has CW and CFBL, CW will normally take precedence over the CFBL feature. However, if the station is made busy by a make-busy key arrangement, CW is not invoked and the CFBL feature takes precedence.

5. References:

   - Module of LSSGR FR-64 (formerly FR-NWT-000064 & formerly TR-NWT-000504)

   - FSD 01-02-0801 Series Completion, Issue 1, May 1990, Module TR-TSY-000568.

   - TR-TSY-000586, FSD 01-02-1450 Call Forwarding Subfeatures, Issue 1, July 1989.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Call Forwarding - Busy Line Interswitch (1047)

Call Forwarding Busy Line (CFBL) is a central office software capability that allows a client to have an incoming call redirected to another Directory Number (DN) if the number dialed (the client's number) is in a busy condition. The service is activated by a service order. A call forwarded due to a busy condition would always forward to the preprogrammed number (selected at the time of the service order). The called number and the redirected number may be in the same or in different central office switches. The service is deactivated or the preprogrammed number is changed by a service order.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Busy Line Interswitch	AM - Busy Line Transfer	CNS
	BA - Fixed Call Forwarding	CNS
	BA - Call Forwarding Busy Line/Don't Answer	CNS
	BS - Call Forwarding Busy Line	CNS
	NX - Call Forwarding 2	CNS
	PB - Busy Call Forwarding Extended	CNS
	SWB - Call Forwarding Busy Line	CNS
	USW - Call Forwarding Busy Line (Expanded)	CNS
	USW - Call Forwarding Busy Line/Don't Answer (Expanded)	CNS

FEATURE OPERATION:

This feature is activated/deactivated by a service order. The "forward to" number is also selected and preprogrammed at the time of the service order. (Refer to the capabilities called "Call Forwarding - Busy Line or Don't Answer - Customer Control of Activation/Deactivation" and "Call Forwarding - Busy Line or Don't Answer - Customer Control of Forward-To Number" for the services with customer control.)

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE10.09*	5E2(2)	BCS24

* References to switching system generics that have not yet been released by the vendors are based on our current information about which features are planned for inclusion in those generic releases. If the vendors change the availability of any features for future generic releases that are referenced in this document, the availability of some services may be affected.

2. Multiline customers can have CFBL on each line if desired.

3. Calls may be forwarded to any telephone number, including DID numbers, served by the same or a different central office.

4. Subscribers may have CFBL with Call Forwarding Don't Answer (CFDA), Call Forwarding Variable (CFV), and Call Waiting (CW). If a station has CFV and CFBL or CFDA active, then CFV will override the CFBL and/or CFDA features. If a station has CW and CFBL, CW will normally take precedence over the CFBL feature. However, if the station is made busy by a make-busy key arrangement, CW is not invoked and the CFBL feature takes precedence.

5. References:

   • Module of LSSGR FR-64 (formerly FR-NWT-000064 & formerly TR-NWT-000504).

   • FSD 01-02-0801 Series Completion, Issue 1, May 1990, Module TR-TSY-000568.

   • TR-TSY-000586, FSD 01-02-1450 Call Forwarding Subfeatures, Issue 1, July 1989.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Call Forwarding - Busy Line or Don't Answer - Customer Control of Activation/Deactivation (1048)

This capability provides ESP's clients with the ability to activate the Call Forwarding Busy Line and Call Forwarding Don't Answer features by dialing an access code in the form of *XX. The ESP's client will be able to deactivate the Call Forwarding Busy Line and Call Forwarding Don't Answer features by dialing another access code, also in the form of *XX.

Limitations may apply, depending on the type of switching systems serving the client.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Busy Line or Don't Answer - Customer Control of Activation/Deactivation	AM - Customer Control of Busy Line Transfer or Alternate Answering	CNS
	BS - Customer Control of CF BL/DA	CNS
	NX - CallAbility^{SM} Feature Access	CNS
	PB - Call Forwarding Busy Line/Don't Answer- Fixed	CNS
	USW - Call Forwarding BL, Customer Programmable	CNS
	USW - Call Forwarding DA, Customer Programmable	CNS

FEATURE OPERATION:

Customer control of Call Forwarding Busy Line/Don't Answer is a central office software capability that allows a subscriber to activate and deactivate Call Forwarding Busy Line (CFBL) and/or Call Forwarding Don't Answer (CFDA). Activation of these services allows the customer to have an incoming call redirected to a telephone number preset at the time the service was established by service order. The service is activated/deactivated by the subscriber dialing the assigned access code. Access codes are in the same format as those for Call Forwarding Variable (*XX). CFDA and CFBL may have different activation/deactivation codes. The party activating these services does not have to be in the same central office switch as the forwarded telephone number.

Also see the service called "Call Forwarding - Busy Line or Don't Answer - Customer Control of Forward-To Number."

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE10.09*	5E2(2)	BCS27

* References to switching system generics that have not yet been released by the vendors are based on our current information about which features are planned for inclusion in those generic releases. If the vendors change the availability of any features for future generic releases that are referenced in this document, the availability of some services may be affected.

2. Multiline customers can have CFBL/DA - Customer Control on each line if desired.

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^{SM} CallAbility is a registered service mark of NYNEX. CallAbility will be offered from selected digital switches.

3. References:

- TR-TSY-000586, Module of LSSGR FR-64 (formerly FR-NWT-000064), FSD 01-02-1450, Call Forwarding Subfeatures, Issue 1, July 1989.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Call Forwarding - Busy Line or Don't Answer - Customer Control of Forward-To Number (1049)

This capability provides the ESP's client with the ability to change the Forward-To number for Call Forwarding Busy Line by dialing an access code in the form of *XX, and to change the Forward-To number for Call Forwarding Don't Answer by dialing another access code, also in the form of *XX. Limitations may apply, depending on the type of switching system serving the client.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Busy Line or Don't Answer - Customer Control of Forward-To Number	AM - Customer Control of Busy Line Transfer or Alternate Answering	CNS
	PB - Call Forwarding Busy Line/Don't Answer Programmable	CNS
	USW - Call Forwarding BL, Customer Programmable	CNS
	USW - Call Forwarding DA, Customer Programmable	CNS

FEATURE OPERATION:

This feature can be controlled (activated or deactivated) by the customer in two ways.

1. The customer dials an activation code and the remote DN or the deactivation code (i.e., Ameritech, Pacific Bell and U S WEST). The codes are in the same format as Call Forwarding Variable (*XX).

   Customer control of Call Forwarding Busy Line/Don't Answer is a central office software capability that allows a subscriber to have an incoming call redirected to another Directory Number (DN) if the number dialed (the subscriber's number) is in a busy condition or is not answered. The service is activated by the subscriber dialing an activation code, much in the same manner as Call Forwarding Variable, and entering the remote number that calls will be forwarded to. The called number and the redirected number do not have to be in the same switch. The service and forwarded-to number are deactivated by dialing the deactivation code.

2. The customer dials an access number (e.g., an 800 number or a regular NPA-NXX-XXXX number from any station (i.e., NYNEX). An announcement is returned asking for the customer directory number and a security code. If the dialed directory number and security code match and the customer subscribes to CFBL, a prompt to select the feature (e.g., CFBL/DA) and the specific action (e.g., activation or deactivation) is returned. After making his change the customer can wait for a confirmation or use, at any time, the verify capability to determine the feature status and the forward to number.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE10.09*	5E2(2)	BCS27

* References to switching system generics that have not yet been released by the vendors are based on our current information about which features are planned for inclusion in those generic releases. If the vendors change the availability of any features for future generic releases that are referenced in this document, the availability of some services may be affected.

2. Multiline customers can have CFBL/DA - Customer Control on each line if desired.

3. The maximum number of digits that can be programmed are: 1A ESS - 16 digits

   5ESS - 24 digits

   DMS-100 - 24 digits

4. Subscribers may have CFBL with CFDA, Call Forwarding Variable (CFV), and Call Waiting (CW). If a station has CFV and CFBL or CFDA active, then CFV will override the CFBL and/or CFDA features. In the 1A ESS Call Waiting takes precedence and does not interact with CFBL. Un-answered Call Waiting calls do not revert to CFDA in either the 1A ESS or the 5ESS.

5. References:

   • TR-TSY-000586, Module of LSSGR FR-64 (formerly FR-NWT-000064), FSD 01-02-1450, Call Forwarding Subfeatures, Issue 1, July 1989.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Call Forwarding Don't Answer After Call Waiting (CFDA After CW) (1093)

Call Forwarding Don't Answer After Call Waiting is a central office software capability that allows a client to utilize the Call Forwarding Don't Answer (CFDA) feature even though the client's line is also equipped with Call Waiting (CW).

CFDA/CW interaction was initially designed for CW to be dominant over CFDA. For a busy line equipped with both features (CFDA and CW), receiving an incoming call invoked the CW tone, but did not transfer to the CFDA forward-to number. This resulted in the CFDA feature being effective only when the line was not busy and not answered.

This capability improves the call waiting feature by allowing subscribers with the call waiting feature to specify the way an incoming call is to be treated when a call comes in while the subscriber is currently involved in a call with another party. When the call waiting tone is heard, the subscriber has the following options:

- initiate the standard call-waiting options (ignore, flash to put the existing call on hold and answer the second call, flash to go back to the first call, etc.)

- forward the call to another preselected directory number.

The busy and call forwarding options are selected by the subscriber pressing the appropriate key on a DTMF telephone set.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding Don't Answer After Call Waiting	AM - Alternate Answer After Call Waiting	CNS
	AM - Call Forwarding With Call Waiting	CNS
	BA - Call Forwarding Don't Answer	CNS*
	BS - Call Forwarding Don't Answer	CNS*
	NX - Call Forwarding II	CNS*
	PB - Modification of Call Waiting	CNS
	USW - Call Waiting	CNS

FEATURE OPERATION:

The new feature interaction allows a client to subscribe to both CFDA and CW, and receive the benefits of both features. An incoming call to a busy line will invoke the CW tone. The client can place the existing call on hold and answer the call, or by not answering the call, can allow the CFDA feature to assume control of the new call and transfer it to the CFDA forward-to number.

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*This capability is inherent with Call Forwarding Don't Answer in Switches which have been modified. Check wire center deployment report for availability.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE10.11	5E7	BCS32

2. This feature is activated on a office basis. The AT&T switches (1A ESS and 5ESS) have a line-by-line override parameter to accommodate any customer situations where the capability may not be desired.

3. In the DMS-100 switch, the feature only affects those CFDA and CW customers served by RES. There is no line-by-line override parameter in the DMS-100 switch.

4. The line specific CFDA features (number of rings, inter/intraoffice forwarding) will operate the same as though the line were on-hook and not answered.

5. Standard CFDA and CW operation applies.

6. References:

   - LSSGR: Call Waiting, FSD-01-02-1201, TR-TSY-000571, Issue 1 - October 1989, Revision 1 - June 1991 [includes CFDA interaction]

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Call Forwarding - Don't Answer Intraswitch (1050)

Call Forwarding Don't Answer (CFDA) is a central office software capability that allows a client to have an incoming call redirected to another Directory Number (DN) if the number dialed (the client's number) is not answered after a user-specified number of rings (or time interval). The service is activated by a service order. The called number and the redirected number (forwarded-to number) are coded in the central office memory and can only be changed through a service order. The customer may specify the number of rings (or time interval) at the time of the service order. The customer has the option of answering the call prior to its being forwarded, as long as the call is answered within the ringing cycle (time interval) selected. The called number and the redirected number (forwarded-to number) must be in the same central office switch. The service is deactivated, the forwarded-to number changed, or the number of rings (time interval) is changed only by a service order.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Don't Answer Intraswitch	AM - Alternate Answering	CNS
	BA - Fixed Call Forwarding	CNS
	BA - Call Forwarding Busy Line/Don't Answer	CNS
	BS - Call Forwarding Don't Answer	CNS
	NX - Call Forwarding 2	CNS
	PB - Call Forwarding Don't Answer	CNS
	SWB - Call Forwarding Don't Answer	CNS
	USW - Call Forwarding Don't Answer	CNS
	USW - Call Forwarding Busy Line/Don't Answer	CNS

FEATURE OPERATION:

This feature is activated/deactivated by a service order. The "forward-to" number and the number of rings (time interval) is also selected and preprogrammed at the time of the service order. (Refer to the capabilities called "Call Forwarding - Busy Line or Don't Answer - Customer Control of Activation/Deactivation" and "Call Forwarding - Busy Line or Don't Answer - Customer Control of Forward-To Number" for the services with customer control.)

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE8A	5E2(2)	BCS24

2. Multiline customers can have CFDA on each line if desired.

3. Calls may be forwarded to any telephone number served by the same central office that serves the base station except DID numbers in the 1A ESS. Forwarding to DID numbers in the 1A ESS will be available in generic 1AE10.09*. (* References to switching system generics that have not yet been released by the vendors are based on our current information about which features are planned for inclusion in those generic releases. If the vendors change the availability of any features for future generic releases that are referenced in this document, the availability of some services may be affected.)

4. Subscribers may have CFDA with Call Forwarding Busy Line (CFBL), Call Forwarding Variable (CFV), and Call Waiting (CW). If a station has CFV and CFBL or CFDA active, then CFV will override the CFBL and/or CFDA features. If a station has CW and CFDA, CFDA will take precedence over the CW feature if the station is idle. However, if the station is busy, CW will take precedence and does not allow the CFDA feature to take effect if the waiting call is unanswered.

5. References:

   - Module of LSSGR FR-64 (formerly FR-NWT-000064 & formerly TR-TSY-000504).

   - TR-TSY-000586, FSD 01-02-1450 Call Forwarding Subfeatures, Issue 1, July 1989.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Call Forwarding - Don't Answer Interswitch (1051)

Call Forwarding Don't Answer (CFDA) is a central office software capability that allows a client to have an incoming call redirected to another Directory Number (DN) if the number dialed (the client's number) is not answered after a user-specified number of rings (or time interval). The service is activated by a service order. The called number and the redirected number (forwarded-to number) are coded in the central office memory and can only be changed through a service order. The customer may specify the number of rings (or time interval) at the time of the service order. The customer has the option of answering the call prior to its being forwarded, as long as the call is answered within the ringing cycle (time interval) selected. The called number and the redirected number (forwarded-to number) may be in the same or a different central office switch. The service is deactivated, the forwarded-to number changed, or the number of rings (time interval) is changed only by a service order.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Don't Answer Interswitch	AM - Alternate Answering	CNS
	BA - Fixed Call Forwarding	CNS
	BA - Call Forwarding Busy Line/Don't Answer	CNS
	BS - Call Forwarding Don't Answer	CNS
	NX - Call Forwarding 2	CNS
	PB - Call Forwarding Don't Answer Interswitch	CNS
	SWB - Call Forwarding Don't Answer	CNS
	USW - Call Forwarding Don't Answer (Expanded)	CNS
	USW - Call Forwarding Busy Line/Don't Answer (Expanded)	CNS

FEATURE OPERATION:

This feature is activated/deactivated by a service order. The "forward-to" number and the number of rings (time interval) is also selected and preprogrammed at the time of the service order. (Refer to the capabilities called "Call Forwarding - Busy Line or Don't Answer - Customer Control of Activation/Deactivation" and "Call Forwarding - Busy Line or Don't Answer - Customer Control of Forward-To Number" for the services with customer control.)

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE10.09*	5E2(2)	BCS24

* References to switching system generics that have not yet been released by the vendors are based on our current information about which features are planned for inclusion in those generic releases. If the vendors change the availability of any features for future generic releases that are referenced in this document, the availability of some services may be affected.

2. Multiline customers can have CFDA on each line if desired.

3. Calls may be forwarded to any telephone number, including DID numbers, served by the same or a different central office.

4. The caller may hear multiple call progress tones if the remote DN is busy.

5. Subscribers may have CFDA with Call Forwarding Busy Line (CFBL), Call Forwarding Variable (CFV), and Call Waiting (CW). If a station has CFV and CFBL or CFDA active, then CFV will override the CFBL and/or CFDA features. If a station has CW and CFDA, CFDA will take precedence over the CW feature if the station is idle. However, if the station is busy, CW will take precedence and does not allow the CFDA feature to take effect if the waiting call is unanswered.

6. References:

   • Module of LSSGR FR-64 (formerly FR-NWT-000064 & formerly TR-TSY-000504).

   • TR-TSY-000586, FSD 01-02-1450 Call Forwarding Subfeatures, Issue 1, July 1989.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Call Forwarding - Multiple Simultaneous Calls Interswitch (1052)

This feature provides the capability to specify the number of simultaneous incoming calls to forward from the same number to a hunt group or equivalent arrangement such as DID when the forwarding number and the hunt group (or equivalent) are served by a different central office switch.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Multiple Simultaneous Calls Interswitch	AM - Busy Line Transfer of Alternate Answer	CNS
	BA - Call Forwarding-Multiple Simultaneous Calls Interswitch	CNS
	BS - Call Forwarding Variable Multiple Simultaneous Calls	CNS
	BS - CF BL/DA Multiple Simultaneous Calls	CNS
	NX - Call Forwarding Variable	CNS
	PB - Call Forwarding Variable	CNS
	SWB - Simultaneous Call Forwarding	CNS
	USW - Call Forwarding Variable	CNS

FEATURE OPERATION:

The maximum number of multiple simultaneous call forwarding is Telephone company defined on a per line basis, and on the basis of the type of call forwarding, at the time of service order entry.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	5ESS	DMS-100
Earliest Generic Release	5E2(2)	BCS28

2. This capability is available for the Call Forwarding Variable (CFV), Call Forwarding Busy Line (CFBL) and Call Forwarding Don't Answer (CFDA) features.

3. In the 5ESS switch the number of simultaneous calls allowed can range in size from one to ninety-nine. In the DMS-100 the size can range from 1 to 1024 via the Residential Enhanced Services.

4. In the DMS-100 switches, there may be some limitations on providing this for CFBL or CFDA depending on the current Generic program of the serving central office.

5. Reference for Call Forwarding Variable:

  • TR-TSY-000580, Module of LSSGR FR-64 (formerly FR-NWT-000064), FSD 01-02-1401 Call Forwarding Variable, Issue 1, October 1989.

  • TR-TSY-000586, FSD 01-02-1450 Call Forwarding Subfeatures, Issue 1, July 1989.

Call Forwarding - Variable (1053)

This capability provides the ESP's client with the ability to forward all calls to a second directory number for handling. As part of the activation of the feature, an associated call is placed to the ESP's forward-to number.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Variable	AM - Call Forwarding Variable	CNS
	BA - Call Forwarding	CNS
	BS - Call Forwarding Variable	CNS
	NX - Call Forwarding	CNS
	PB - Call Forwarding Variable	CNS
	SWB - Call Forwarding	CNS
	USW - Call Forwarding Variable	CNS

FEATURE OPERATION:

To activate call forwarding variable with the ESP's number as the forward-to number, the ESP's client dials the call forwarding variable activation code. A recall dial tone (stutter dial tone) is provided, and then the ESP's client dials the ESP's number. When the ESP answers the call, activation is complete. (If the ESP does not answer, the customer may repeat the process within a specified amount of time, e.g., one minute, and the feature will be activated.) Depending on the type of central office switch serving the ESP's client, while call forwarding variable is active, the ESP's client's line will receive a reminder ring whenever a call is forwarded.

To deactivate the feature, the ESP's client dials the call forwarding variable deactivation code.

When call forwarding variable is active, the ESP's client's ability to originate calls will be unaffected.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE8A	5E2(2)	BCS23

2. Call Forwarding Variable will override Call Forwarding Don't Answer and Call Forwarding Busy Line if all three features are active at the same time.

3. Calls may be forwarded to any telephone number including DID numbers served by the same or a different central office.

4. References:

- TR-TSY-000580, Module of LSSGR FR-64 (formerly FR-NWT-000064), FSD 01-02-1401 Call Forwarding Variable, Issue 1, October 1989.

- TR-TSY-000586, FSD 01-02-1450 Call Forwarding Subfeatures, Issue 1, July 1989.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Call Forwarding - Variable - Activation Without Courtesy Call (1054)

This capability provides the ESP's client with the ability to activate the call forwarding variable (forward all calls) feature without completing a call to the ESP's forward-to number.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Variable - Activation Without Courtesy Call	AM - Call Forwarding Variable	CNS
	BA - Call Forwarding-Variable-Activation Without Courtesy Call	CNS
	BS - Remote Access - Call Forwarding Variable	CNS
	NX - CallAbility^{SM} Feature Access	CNS
	PB - Call Forwarding Variable	CNS
	USW - Call Forwarding Variable Without Call Completion	CNS

FEATURE OPERATION:

To activate call forwarding variable with the ESP's number as the forward-to number, the ESP's client either dials the call forwarding variable activation code of the form *XX or an access number.

1. Dialing an activation code (i.e., Ameritech, Bell Atlantic, BellSouth, Pacific Bell and U S WEST). A recall dial tone (stutter dial tone) is provided, and then the ESP's client inputs the ESP's number by dialing it. If the activation can be accomplished for the designated forward-to address, then the switch responds with confirmation tone.

2. Dialing an Access Number (i.e., NYNEX). The customer dials an access number (e.g., an 800 number or a regular NPA-NXX-XXXX number) from any station. An announcement is returned asking for the customer directory number and a security code. If the dialed directory number and security code match and the customer subscribes to the service a prompt to select the feature (e.g., CFV) and the specific action (i.e., activation) is returned. After making the change the customer can wait for a confirmation or use, at any time, the verify capability to determine the feature status and forward to number.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	5ESS
Earliest Generic Release	5E2(2)*

* Requires Business and Residence Custom Service (BRCS).

2. When call forwarding variable is active, the ESP's client's ability to originate calls will be unaffected.

3. References:

   • TR-TSY-000586, FSD 01-02-1450 Call Forwarding Subfeatures, Issue 1, July 1989

   • TR-TSY-000580 Call Forwarding Variable FSD 01-02-1401, Issue 1, October 1989.

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^{SM} CallAbility is a registered service mark of NYNEX. CallAbility will be offered from selected digital switches.

Call Forwarding - Variable - Remote Activation/Control (1055)

This capability gives the ESP's client the ability to activate or deactivate the call forwarding variable (forward all calls) feature from remote locations other than their base station. The signaling used to activate or deactivate the call forwarding feature from the remote location must be from a Dual Tone Multi- Frequency(DTMF) set.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding - Variable - Remote Activation/Control	AM - Call Forwarding - Variable - Remote Activation/Control	CNS
	BA - Ultra Forward	CNS
	BS - Remote Activation of Call Forwarding	CNS
	NX - CallAbility^{SM} Feature Access	CNS
	PB - Call Forwarding-Variable-Remote Activation/Control	CNS
	SWB - Remote Activation of Call Forwarding	CNS
	USW - Remote Access Forwarding	CNS

FEATURE OPERATION:

The ESP's client has two options for changing the forward-to number from a remote station:

1. The remote activation of call forwarding variable feature provides a dedicated directory number that can be used for remote activation (i.e., Ameritech, Bell Atlantic, BellSouth, Pacific Bell, Southwestern Bell). A caller may place a call to this remote activation directory number from any station. Calls to this number are answered with a tone or announcement. The caller then dials, on a DTMF station from his/her remote location, his/her home (base station) directory number and a security code. If the dialed directory number and security code match and that customer subscribes to remote activation, confirmation tone followed by dial tone is returned. The customer then proceeds through the call forwarding activation/deactivation procedure as if at home (at the base station).

2. Dialing an Access Number (i.e., NYNEX, U S WEST). The customer dials an access number (e.g., an 800 number or a regular NPA-NXX-XXXX number) from any station. An announcement is returned asking for the customer directory number and a security code. If the dialed directory number and security code match and the customer subscribes to remote activation, a prompt to select the feature (e.g., CFV) and the specific action (e.g., activation or deactivation) is returned. After entering their selection, the customer can wait for a confirmation or use, at any time, the verify capability to determine the feature status and the forward to number.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS*	5ESS*	DMS-100*
Earliest Generic Release	1AE10	5E5	BCS28

Note: * This service may be provided via a switching feature in the switch or via an adjunct processor.

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2. Reference:

- Module of LSSGR FR-64 (formerly FR-NWT-000064 & formerly TR-NWT-000504)

Call Forwarding With Variable Rings (1102)

In the event that the called telephone number is not answered within a designated parameter, normally three to four rings, the Call Forwarding Don't Answer feature automatically forwards incoming calls to a predetermined, dialable telephone number served by the same central office switch, or provides interswitch forwarding to a predetermined, dialable telephone number. This feature provides the ability to change the operative number of rings prior to call forwarding.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Forwarding With Variable Rings	AM - Customer Changeable Number of Rings	CNS
	BA - Ring Count Change	CNS
	NX - CallAbility[SM] Feature Access	CNS

FEATURE OPERATION:

This feature is modified on a line basis by a service order. The number of rings (time interval) is selected at the time of the service origination or at any time the customer requests a change.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE11.03	5E6	BCS 29

2. The minimum and maximum number of rings (time interval) is limited on a per switch basis. The normal time range is 0 to 60 seconds.

3. Reference:

• GR-1520, Ring Control, Issue 2, October 1994 (component of FR-64)

[SM] CallAbility is a registered service mark of NYNEX. CallAbility will be offered from selected digital switches.

Call Waiting - Cancel (1056)

Cancel Call Waiting allows a subscriber with the Call Waiting feature to inhibit reception of the Call Waiting Tone for the duration of a single call. This prevents interruption of data traffic or interruption during an important telephone call.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Waiting - Cancel	AM - Call Waiting	CNS
	BA - Tone Block	CNS
	BS - Call Waiting	CNS
	NX - Cancel Call Waiting	CNS
	PB - Call Waiting	CNS
	SWB - Cancel Call Waiting	CNS
	USW - Call Waiting	CNS

FEATURE OPERATION:

1. When a subscriber with the Call Waiting Feature wishes to cancel the Call Waiting feature during the call, they must depress the receiver button, listen for dial tone, and dial Star (*) plus 70 for touchtone (DTMF) phones or dial 1170 for rotary dial (DP) phones (Cancel Call Waiting Code) for a POTS line or a Business Group line. After dialing the code, the subscriber listens for confirmation tone and is then automatically reconnected to the call in progress. The Call Waiting feature has then been deactivated and no interruptions are allowed during the call.

2. When a subscriber with the Call Waiting Feature wishes to cancel the Call Waiting Feature prior to making a call, they must lift the receiver, listen for dial tone, and dial Star (*) plus 70 for touchtone (DTMF) phones or dial 1170 for rotary (DP) phones (Cancel Call Waiting Code) for a POTS line or a Business Group line. After dialing the code, the subscriber listens for confirmation tone followed by dial tone. The Call Waiting Feature has then been deactivated and no interruptions are allowed during the call.

3. Call Waiting will be re-established when the call is terminated.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE8A	5E2(2)	BCS24

2. Call Forwarding Variable is compatible with Call Waiting and Cancel Call Waiting service.

3. Call Hold and Call Waiting with the Cancel option can be assigned to the same line.

4. Call Pickup and Call Waiting with the Cancel option can be assigned to the same line.

5. Speed Calling and Call Waiting with the Cancel option can be assigned to the same line.

6. Call Waiting with the Cancel option may be assigned to either or both parties on a Two-Party Line.

7. Cancel Call Waiting may not be provided on the following lines:

   - Coin Lines

   - Denied Originating Lines

   - Four and Eight Party Lines

   - PBX Lines

   - Hotel/Motel Calls Routed to TSPS

8. References:

   - TR-TSY-000572, Module of LSSGR FR 64 (formerly FR-NWT-000064), FSD 01-02-1204 Cancel Call Waiting, Issue 1, July 1989, Revision 1, October 1993.

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Called Directory Number Delivery via DID (1057)

This service allows the central office switch to deliver all or part of the destination address to the ESP at the time the call is established. Usually, the destination address delivered is the same as the number originally dialed. When number translations have occurred, e.g., 800 calls, the DID number delivered is not the called number.

Generic Name of ONA Service	Product Name	BSE or CNS
Called Directory Number Delivery via DID	AM - Direct Inward Dialing Trunk Termination	BSE
	BA - Direct Inward Dialing Service	BSE
	BS - Direct Inward Dialing	BSE
	NX - DID	BSE
	PB - Direct Inward Dial Service	BSE
	SWB - Direct Inward Dialing	BSE
	USW - Called Directory Number Delivery (DID)	BSE

FEATURE OPERATION:

1. Customers order this service from the telephone company. A client calling a customer is generally unaware that the customer has Direct Inward Dialing (DID) service. The client is not required to perform any additional actions to have the call delivered via a DID trunk group.

2. In a PBX type application, the service allows a client to reach a specific PBX station without the assistance of an attendant or other intermediary.

3. The number of digits forwarded by the central office switch is determined at the time the service is ordered. The customer must also arrange for a block of telephone numbers to be associated with the DID trunks.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE8A	5E2(2)	BCS17

2. A customer may elect to receive Dial Pulse or Dual Tone Multifrequency (DTMF) signaling when using analog facilities. Some companies may offer Multifrequency (MF) outpulsing/signaling to the ESP community. If both the central office switch and the customer's equipment are digital, the customer may be able to order DID trunks with digital connectivity.

3. This service is an incoming service (to the customer's CPE) and is typically a "trunk side" service.

4. References:

   • TR-TSY-000524, Module of LSSGR FR-64 (formerly FR-NWT-000064), Attendant and Customer Switching System Features, Issue 2, July 1987, Revision 1, April 1991.

This service, if offered as a BSE, may be associated with the Circuit Switched Line or Trunk basic serving arrangement, as stated in the individual ONA plans.

Called Directory Number Delivery via ISDN Q.931 *

* A waiver for Switched Access Feature Group K service was denied by the FCC, in CC Docket 89-79, Order dated 7/11/91. As a result, Southwestern Bell Telephone Company was unable to file a tariff on Called Directory Number Delivery via ISDN Q.931.